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PROFESSIONAL COURSES IN THE TRAINING OF TEACHERS.

A REPORT ON AN ENQUIRY INTO VALUES. PART II.

By MARGARET PHILLIPS

VI.—*Value of school practice.*

VII.—*Relative value of theoretical and practical courses.*

VIII.—*Value of training in a school.*

IX.—*Differences between trained and untrained teachers.*

X.—*Practical and personal values of training.*

XI.—*Summary of results and conclusions. (Part II.)*

VI.

The next two questions are best treated together :

- (2) WHAT IS THE RELATIVE VALUE OF THE THEORETIC AND PRACTICAL COURSES? HAS THE PRACTICAL COURSE THE SPECIAL VALUE ATTRIBUTED TO IT BY THE CAMBRIDGE COMMITTEE?
- (3) WHICH HAS MOST VALUE—COMPLETE IMMERSION IN THE LIFE OF THE SCHOOL DURING THE PERIOD OF PRACTICAL TRAINING, OR THE MAINTENANCE OF A CONNECTION WITH COLLEGE? WHICH IS MORE CONDUCIVE TO "WIDER EXPERIENCE AND GREATER BREADTH OF OUTLOOK?"

We first summarize replies concerning :

VALUE OF SCHOOL PRACTICE.

| | <i>No. of Replies.</i> | |
|---|------------------------|---------------|
| | <i>Men.</i> | <i>Women.</i> |
| A.—APPRECIATIVE. | | |
| 1.—Very valuable | 7 | 9 |
| 2.—Gave confidence and power to adapt to varying conditions | 2 | 8 |
| 3.—Gave an opportunity to experiment; formed the basis of future work | — | 9 |
| 4.—Enabled one to correct mistakes and weaknesses before they became habits | 1 | 6 |

The Training of Teachers

| | No. of Replies. | |
|--|-----------------|--------|
| | Men. | Women. |
| 5.—Gave practice in preparation of schemes, in organization, teaching technique, and class management | 2 | 6 |
| 6.—Increased one's knowledge of children; stimulated the study of psychology and of teaching method .. | 1 | 9 |
| 7.—Developed the habit of self criticism.. .. . | 1 | 2 |
| 8.—Criticism and advice of college staff particularly helpful | 5 | 14 |
| 9.—Criticism and advice of school staff particularly helpful | 1 | 4 |
| B.—CRITICAL AND SUGGESTIVE. | | |
| 1.—Practice has very little value | 2 | 6 |
| 2.—Period of practice is | | |
| too short | — | 15 |
| too crowded | — | 4 |
| too scrappy and disconnected | — | 6 |
| conducted at too great tension | — | 10 |
| under unreal conditions | — | 8 |
| 3.—Students are oversupervised; insufficiently responsible; do not take sufficient part in real life of school | 2 | 19 |
| 4.—Value of work done by students is insufficiently tested | — | 6 |
| 5.—Period of practice needs to be more compact .. | 1 | 4 |
| 6.—Period of practice needs to be longer and more leisurely | 2 | 4 |
| 7.—Period of preliminary observation, study of syllabus and preparation of lessons needed before practice begins | 1 | 5 |
| 8.—Period of preliminary unsupervised practice needed with freedom to experiment and help given when required | 1 | 5 |
| 9.—College help should be given before practice rather than in the form of criticism lessons | — | 3 |
| 10.—College supervision in the form of criticism lessons is not helpful | — | 11 |
| 11.—College supervisors need to be really practical teachers | 3 | 6 |
| 12.—Contact with college during practice should be closer; more criticism wanted | — | 5 |
| 13.—School staffs do not take sufficient part in supervision | — | 3 |
| 14.—Students should be freed from all but college supervision | — | 1 |

Sample replies follow :

A.1-6.—GIVE CONFIDENCE ; ADAPTABILITY ; OPPORTUNITY TO EXPERIMENT ; A BASIS FOR FUTURE WORK. CORRECT MISTAKES AND WEAKNESSES ; GIVE PRACTICE IN ORGANIZATION, PREPARATION OF SCHEMES, TEACHING TECHNIQUE AND CLASS MANAGEMENT. AN INCENTIVE TO FURTHER STUDY OF THEORY.

" *School Practice*.—I consider indispensable. I learned the value of class discipline. This point was not sufficiently emphasized during the course. School practice provided me with a powerful incentive to a more careful study of psychology and methods of teaching." (M.)

" *Practical Work*.—Greatest value lies in (1) the correction of faults in technique, and (2) giving confidence to the would-be teacher." (M.)

" *School Practice*, to me, has been the most valuable section in the whole of my training. It gave us the necessary scope to try various methods. We saw 'theoretical psychology' prove itself true in practice. Further practice brought greater confidence in ourselves and our vocation. We were obliged to work out details peculiar to particular circumstances, e.g., *Extra Large Classes*, where the ideal individual treatment is not always possible—and the smallest possible group treatment is substituted. *Special Types of Children*: Dull and backwards—'brilliant,' etc. It is only after a few periods of school practice that we can have begun to grip the real meaning of 'School Teaching.' One has begun to find out how personal adaptations can be made—dislikes remedied—likes cultivated—and what sort of success one is likely to make of such a profession." (W.)

" I feel I cannot over-estimate the value of school practice to me. I was given, and picked up by watching and asking questions, many hints and suggestions which have been of the utmost value to me. What I gained there formed the basis of the way in which I tackled my first post. A first post—first term—in a busy school in a district totally new, with no friends within hail, can be a trial, and my school practice and training helped me to win through." (W.)

" School practice was my salvation. When I began I was afraid of my own voice, of the children, the teachers there, and especially of my criticism mistress. In my second period of school practice I rid myself of most of these fears. I learnt there to discipline a class, to draw up schemes of work, prepare lessons ; and learnt of school organization and syllabus arrangements, which I found very interesting. Perhaps it was because the head of that school was particularly decent, but I learnt more there of school organization than I learnt during my first four years work after leaving college." (W.)

A.7.—DEVELOPS THE HABIT OF SELF CRITICISM.

" *Criticism Lessons* are very good. From them I acquired the habit of criticizing my own efforts. This habit has not only persisted, but has grown stronger, and I now find it a very exacting master. After a trying lesson I take myself thoroughly to task." (M.)

The Training of Teachers

A.8.—HELP GIVEN BY COLLEGE STAFF PARTICULARLY VALUABLE.

"On the whole, I think the most valuable part of my training was school practice under the supervision of college lecturers. This is not to say that the help of the school staff is not valuable—I know I have cause to be grateful to all whom I met in schools. But the help from school staffs was in details. The guiding principles came from the college. The school staffs helped in applying those principles." (M.)

"I don't think we realized the definite help we received in our criticism from lecturers! At school we are expected to take up hints (a thing I hate doing!), or else we are left severely alone until we do something which is disapproved, and then we are reprimanded. Friendly criticism seems a relic of college days. Even our inspectors pass no comments." (W.)

A.9.—HELP GIVEN BY SCHOOL STAFF PARTICULARLY VALUABLE.

"Many of my lessons were given in front of the practising school staff. They were extremely valuable. The staff were very sympathetic, helpful, stimulating, and helped me to realize the great differences between members of the same class." (W.)

"I found that my experience in observing and being criticized by a really good staff at my practice school was of the highest value." (M.)

B.1.—PRACTICE HAS LITTLE VALUE.

"School practice was not of much value to me. I felt all the time that I was rather like a child playing at houses, compared with its mother actually running a house." (W.)

B.2 and 3.—PRACTICE TOO SHORT, CROWDED, SCATTERED; CONDITIONS UNREAL; STUDENTS OVERSUPERVISED AND INSUFFICIENTLY RESPONSIBLE.

"I think the biggest fault of school practice was its brevity. This caused us to try to squeeze into three weeks or a month all sorts of lessons, each trying to prove the truth of some psychological fact or to test the soundness of some method or theory. And because of this, it seems, on looking back, much too concentrated and rather artificial, like playing at schools. One sees now that if all teaching were at such higher pressure and so concentrated as school practice was, we should all be nervous wrecks in six months." (W.)

"The principle of school practice is good—but as I knew it, it was pernicious—accompanied by over-much anxiety and fear, and again, it demanded the teaching of subjects without the necessary urge from within." (W.)

"Generally, there are far too many engaged on the job. When, as sometimes happens (it did in my own case) two or more members of the staff criticize your work in different subjects, when in addition the head mistress or master criticizes, and then your own college supervisor arrives as well—and each opinion probably differs—the poor student may well feel an ill-treated creature." (W.)

"There was not nearly enough school practice, I think, for a totally unexperienced person such as I was. The practice was in scattered bits, and just as I began to know the children, to lose my nervousness, and to grasp the underlying principles of the work that I was doing—the period was over ! If I had had longer attempts, and, if possible, more of them, I should have had more confidence when I really began to teach." (W.)

"What I want to say about school practice is that it isn't half long enough and it isn't half real enough. It is altogether too sheltered a time compared with the thing for which it is supposed to be a preparation. The student ought to be thrown on her own devices more, made to take up the job in real earnest, as if there were no class teacher and no supervisor—only a head who wanted things well done and a certain standard attained." (W.)

"One was never allowed very much scope for minor organization, register marking and such, which loom so large in school, and which seem to be the hall-mark of the successful teacher in the eyes of the head mistress." (W.)

"But what is most important in teaching is almost entirely omitted in all practice—i.e., class control. The steering of a class through the day from lesson to lesson is the most difficult part of teaching. A person may be capable of walking into a room, interesting the class profoundly and delivering a brilliant lesson, but yet be incapable of keeping the class at a steady working level and maintaining interest in all lessons, not for one day, but for months. It is in the transition from lesson to lesson, day to day, and week to week, and in general class control and organization that a teacher needs skill. The practice in acquiring that skill comes with having a class to control. In teaching practice little opportunity is provided for this. (I never had a class wholly to myself—even for a lesson.) A student takes a series of lessons, with the teacher usually there to exercise her influence and take control when the lesson is finished." (W.)

B.4.—VALUE OF STUDENTS' WORK INSUFFICIENTLY TESTED.

"Training in actual teaching meant largely spending much time preparing a lesson, giving the prepared lesson in the prepared way, in front of a prepared class and ending there. One did not realize—nobody perhaps but the class teacher did realize—the vast amount that had passed right over the heads of the children. This seems wrong. It might quite possibly take another three or four lessons, not necessarily on the same subject, to find out the strong and the weak points ; what had been understood ; what had been understood all wrongly ; and what had quite missed fire." (W.)

"Furthermore, the object of it all is to teach. To know whether or not the child has fulfilled its side of the work by learning, it must be in some way tested. Thus responsibility grows. But students' work is not tested (for which they say 'Praise be !') and consequently there is a lack of responsibility.

"Definite courses of work should be attempted in the subjects taken in college, with a test of such work at end of term. This gives idea of steady work of teaching, and forms a transition between the irresponsibility of college and the steady weight of the responsibility of teaching." (W.)

B.5.—PERIOD OF PRACTICE NEEDS TO BE MORE COMPACT.

"I should also like to suggest that a compact period of teaching is worth much more than odd days spread over a long time." (W.)

"A period of full time work in the schools, observing and teaching, is much more useful than two or three mornings per week. The more time a student can spend in the schools, the better will it be for him. (The method sometimes now adopted, of students in their fourth year attending a day school for two mornings a week, is only playing at learning how to teach.)" (M.)

B.6.—PERIOD OF PRACTICE NEEDS TO BE LONGER AND MORE LEISURELY.

"Three weeks in a school at one period is not sufficient time to work through schemes; the student does not have the satisfaction of seeing any result of work done and gets little encouragement. I found this was so in schools with one period for science each week.

"Honours graduates spent a day or two each week over an extended period in a school, and they felt they had achieved something as a recognized 'visiting member' of the staff, and I think this is the better method." (W.)

"I felt that the practice time, in my own college, was crowded and inadequate. Much more could have been learned from a more leisurely course that spread over a term. For instance, a student might be given a course of work for one afternoon a week for a term. I know of the difficulties of supervising such scattered folk, but this is viewing the situation from the student's point of view." (W.)

B.7.—PERIOD OF PRELIMINARY OBSERVATION AND PREPARATION NEEDED.

"School practice—greatest value of all, providing prefaced by adequate observation, particularly of a 'syllabus put into practice and not in theory only.'" (W.)

"I think it would be very helpful if the week before school practice was spent in preparing schemes of work and learning something of method, particularly in relation to the school practice class, after a visit to the school, or several visits if necessary." (W.)

B.8.—PERIOD OF PRELIMINARY UNSUPERVISED PRACTICE WITH FREEDOM TO EXPERIMENT.

"I also feel that some 'unofficial school practice' at the *beginning* of college life would be very valuable. I know (though not from my own experience, fortunately), that the work of many is marred because they know they are at once going to be criticized. The naturally 'timid'—or 'nervous' student, consequently lacks the confidence which she might possess, if she were given a short period in which she could experiment without having to answer for any kinds of results." (W.)

"Confidence in oneself is essential to a successful teacher, and during the training supervisors and class teachers should do all in their power to inspire the student with this confidence. The student should be allowed plenty of freedom with the classes." (W.)

"Practical work should be drastically revised to give student more independence and freedom from interference of so-called 'experts.'" (M.)

B.9.—COLLEGE HELP TO BE GIVEN BEFORE PRACTICE RATHER THAN IN THE FORM OF CRITICISM LESSONS.

"The suggestions, help, discussion, could come *before* the school practice, over the time-table, and then let a week go before the student reported again, except in the case of a very poor teacher who had obviously got into great difficulty, and who wanted help. I think, too, help should be given to the student sometimes before she gives the lesson. She should be required to present her scheme of work some time before the lesson, and advice should be given on the treatment of the subject matter." (W.)

B.10.—COLLEGE CRITICISM NOT ALWAYS HELPFUL.

"The word 'supervisor' suggests a grave error in relationship between student and lecturer, for the latter was almost invariably an outsider—watching and not participating—and only on the rarest occasions did a supervisor and student become two teachers." (W.)

"*School Practice*.—Could and should be one of the most valuable things in the whole training. But I think it is generally spoiled. I know, of course, that supervision is necessary and I expect supervisors realize the difficulties quite as much as I do, if not more. School practice periods *should* be welcome times for the intending teacher; the fact that they are more cursed and dreaded than any part of the training, by the majority of students, proves that something is wrong. The trouble is that there is too much *adverse* criticism—not too much *criticism*." (W.)

"Criticism, I take it, should be of a helpful and persuasive nature, and I am sure all training centres embody that in their rules (moral and understood, if not actual and existent), for lecturers. In actual practice, I *do* think the tendency is to be dogmatic about it, as if there were only certain methods of teaching certain things—as though facts themselves, and not the people by and to whom they are taught, were the really valuable things." (W.)

B.11.—COLLEGE SUPERVISORS NEED TO BE REALLY PRACTICAL TEACHERS.

"The general impression I gained was that with some notable exceptions the average 'training school' staff contains too many young men without adequate class-room experience as subject specialists; men, too, who have scarcely had time or leisure to acquire any real 'philosophy' of life. Training is apt to be a little remote from life in general and from class-room activities in particular." (M.)

"I feel strongly that all lecturers to students in training colleges should themselves have been teaching for a few years in an elementary or secondary school, according to the kind of training which the students wish for. Without this experience I am sure the best of lecturers can never realize all the trials and pitfalls that lie before the teacher in her first year." (W.)

"I feel that the folks who can lecture to training college students really efficiently cannot generally teach even their own subject to lads of ten. Surely there could be found sufficient really good teachers out of elementary schools who could for five or ten years act as supervisors and then go back to meet more difficulties in their own schools for another five or ten years." (W.)

B.12.—CONTACT WITH COLLEGE DURING THE PERIOD OF PRACTICE SHOULD BE CLOSER.

"Except for one lesson at the extreme end of the school practice period, I was seen for five minutes by the head master of the school and by no other person at all. That is, during twelve weeks' teaching I had exactly one hour's supervision. Nevertheless, school practice was the most valuable part of the whole training course, though in my own case the value lay in my being given a free hand to experiment. Indeed, during the whole of my training I never received any advice at all from either a lecturer or a teacher in school. This is most unusual, in training, but I feel it a very strong criticism of the organization of the training that the value of it should depend on school practice entirely in the school where one practises." (W.)

B.13.—SUPERVISION OF SCHOOL PRACTICE SHOULD BE UNDERTAKEN BY THE SCHOOL STAFF.

"As a training for teachers, I think a period of some weeks, with full responsibility for a class, helped by teachers and head teachers, is far above everything else." (W.)

"A great part of the two years ought to be spent in teaching, and conditions should be quite real. The student should be left to it, and the head teacher should be her 'boss.' " (W.)

Here the men (and the graduates) are, on the whole, more appreciative of school practice as in fact carried out; the women (and the two-year students) are equally convinced of the potential importance of the period, but much more critical of its actual conduct. Some of the criticism—notably B.5 and B.6—seems to cancel out. More is probably relevant to particular colleges or types of colleges. There are presumably, for example, colleges where supervision is overdone, others where it is inadequate. The criticisms summarized under B.2 seem to refer to colleges—mainly, but not entirely two-year colleges, in which short concentrated periods of practice are the rule. B.3 seems to be answered by the practice of such centres as give students a full month or more in the schools, living the full life of a member of staff. The suggested period of preliminary observation, preparation, and consultation is, of course, the practice in many colleges. Others follow the suggested plan of giving students a fairly free hand in the class-room during the first week or so of practice. Some criticism is probably due to the supersensitiveness of late adolescence in the matter of personal relationships. (In the sample replies for this section I have tried to select only the maturer and more balanced statements of the various points of view.) The view that school practice has little value is expressed mainly by students who had undergone useful practical experience before entering college. Under the headings B.2 and 3 *numbers* must be borne in mind; the samples given here can give no idea of the length, vehemence

and unanimity with which the points are put ; in particular the reiterated insistence on the importance of a period of responsible practice before certification. The 'feeling of tension, anxiety, and fear' has, I think, been largely eliminated by those colleges which, under the new examination regulations, regard the "teaching mark" as on all fours with the examination mark in other subjects and do not disclose it separately. The reply quoted under B.12 is that of a student practising away from the training centre under the conditions advocated by the Cambridge Committee.

VII.

The preceding section throws, as will be seen, some light on both questions 2 and 3. To complete the answer to question 2 we turn to comments on :

THEORY AND PRACTICE : CAN THEIR VALUES BE SEPARATELY
ESTIMATED ?

| | <i>No of Replies.</i> | |
|---|-----------------------|---------------|
| | <i>Men.</i> | <i>Women.</i> |
| 1.—Yes ; the two branches have little connection | 4 | 2 |
| 2.—No ; theory and practice are mutually indispensable .. | 4 | 12 |
| 3.—Yes ; and theory is the more valuable | — | 13 |
| 4.—Yes ; and practice is the more valuable | 8 | — |
| 5.—Theoretical course as it exists is not good enough .. | 1 | 1 |

SAMPLE REPLIES.

2.—THEORY AND PRACTICE MUTUALLY INDISPENSABLE.

"It does not seem possible to me to estimate separately the value of school practice, college and books. To leave out school practice is like taking a course in gardening without a garden ; and to leave out lecturers and books is like leaving out scientific advice on the farm. The latter might have been possible three centuries ago, but hardly to-day." (*M.*)

"Psychology seems to me as essential to teaching as a theoretical side is to all professions. To become a thoroughly proficient chemist or engineer theoretical work and practical are both necessary. Courses in psychology are the necessary adjuncts to school practice and together they form a teacher's apprenticeship." (*W.*)

"The whole of the practical work correlates naturally with the theory, and is invaluable. Any attempt to assess the value of theory and practice separately would, in my opinion, belittle both." (*M.*)

3.—THEORY THE MORE VALUABLE.

"Certainly, I think the value of (a) and (b) can be separately estimated. Courses in psychology, social study, etc., go to form your own background : the practical side is of more surface value and is much less important in the long run. They are not, naturally, unconnected : if you group them together I should class (a) as the fundamental, and (b) as the superficial and even transitory." (W.)

"I have found 1(a) of eminently more help than 1(b), chiefly because I think that psychology, etc., can be applied to every case which arises, whereas practical work is much more particular and individual, and rarely satisfies every requirement. I have only found 1(b) useful in giving me confidence in front of a class and a wider knowledge of practical education. Personally, I disliked 1(b) intensely, so that at the time the value was distinctly negative." (W.)

"I feel that (a) is by far the most important. It is the Psychology, Principles of Teaching and Social Study that help us 'ourselves'—to become more fit to meet any demand and to tackle our work in the right spirit, however discouraging the practical deficiencies may be. I think it is the inner life of the teacher that matters most." (W.)

4.—PRACTICE THE MORE VALUABLE.

"The practical work was of incomparably the greater value." (M.)

"(b) without (a) would have a diminished but still considerable value, whereas (a) without (b) would be of very little benefit to the student." (M.)

5.—THE THEORY COURSES ARE NOT GOOD ENOUGH.

"Theory courses were not all of equal value. They all suffered in one respect ; academically they were on a far lower plane than the degree work just finished, and lectures often received the contempt they merited from graduates." (M.)

"The practical work was valuable even in the imperfect conditions of my own practice, but it was a common feeling among the students that the academic course did not use fully the intellectual capacities of people who in their degree courses had just begun to respect scholarship. The serious-minded read hard, but avoided lectures as much as possible ; there was no real interest in, or general discussion of educational problems as one felt there ought to have been. The lecturers were not the stimulus and inspiration we had found lecturers and tutors to be in our degree courses." (W.)

As will be seen the view that theory and practice are mutually indispensable is here the most popular. The greater value of theory is typically a woman's point of view and consistent with what we have already noted ; the greater value of practice is a view held mainly by men and again consistent. Criticism of the theory courses comes only from two graduates, and is offset by the contrary views of other graduates from different universities.

Our answer to question 2 now seems clear. Judging from our evidence (and we include here what was previously said about the value of courses in psychology), the practical course has not the overwhelming importance which the Cambridge Committee attributes to it.

VIII.

To complete our answer to Question 3, we turn first to that section of the questionnaire which asks, "Do you feel that experience in a good school under the guidance of the staff would be an adequate substitute for training?"

EXPERIENCE IN GOOD SCHOOL UNDER STAFF.

| | <i>No of Replies.</i> | |
|--|-----------------------|---------------|
| | <i>Men.</i> | <i>Women.</i> |
| 1.—An adequate substitute for training | 2 | — |
| 2.—A useful foundation for, or supplement to, training .. | 1 | 6 |
| 3.—Training could not be undertaken by existing staffs even of good schools | 5 | 15 |
| 4.—Training students and teaching children are different pieces of work | 2 | 4 |
| 5.—Training given in school would be too practical, <i>ad hoc</i> , narrow and immediate in outlook | 4 | 11 |
| 6.—Would not be systematic, scientific, or theoretic | 1 | 11 |
| 7.—Would not give ideals, values, or a philosophy | 1 | 8 |
| 8.—Would not present a sufficient variety of ideas or encourage discrimination or originality | 1 | 7 |
| 9.—Would not provide leisure or opportunity for discussion, criticism, individual opinion and personal development.. | 2 | 11 |
| 10.—Teachers produced would be imitative and unadaptable.. | — | 2 |
| 11.—Teachers produced would be conservative in outlook .. | 1 | 6 |
| 12.—Teachers produced would be lacking in a sense of vocation | 1 | 4 |
| 13.—On the contrary, contact with college needs to be maintained during the first year after training | — | 4 |
| 14.—And at intervals by means of refresher courses | — | 4 |

1.—IS AN ADEQUATE SUBSTITUTE FOR TRAINING.

"When the 'good school' and, equally important, the 'good staff' can be found, I think experience therein would be an adequate substitute for 'training.' That was the advantage of the old-fashioned practising school with its specially-selected staff and often the head master as the College Master of Method. *Unfortunately he was often called upon to lecture on psychology, etc., for which he was not equally well fitted.*" (M.)

2.—IS A USEFUL FOUNDATION OR SUPPLEMENT TO TRAINING.

"Experience in a good school, under the guidance of an *efficient trained* staff, would, I think, make a better foundation for a college training, but not a substitute for it." (W.)

"I agree that experience under the guidance of acting teachers is a useful and helpful beginning." (M.)

"I think such experience would be extremely valuable as a supplement to college training, particularly if the student were still in touch with college and able to get help and advice from the lecturers." (W.)

3.—TRAINING COULD NOT BE UNDERTAKEN BY EXISTING STAFFS.

"I do not think the guidance of a staff could be any substitute for training. The staff either refuse to do this extra duty, and small blame to them, or they are conscientious and interfere too much and with too narrow-minded an outlook. Inevitably they are more concerned with the progress of the pupil under the charge of a student than with the student's own best line of development. When you do come across a teacher with a disinterested zeal for conveying his own skill to students, he is usually too cranky and opinionated to be a safe guide." (M.)

"I do not think that experience in a good school under the guidance of the staff would be adequate. (1) No staff has time to give to discussion of all the problems which arise; (2) One needs to be away from the field of action in considering problems and ideas; (3) No matter how good the staff, they are not likely to be entirely and continually up-to-date." (W.)

"I do not feel the guidance of the staff would be an adequate substitute for training. The advice older colleagues give tends to be entirely practical, *ad hoc*. Older colleagues tend to have their own methods, which, however good, should not be imposed on young teachers. My own experience has been most happy, but some of my contemporaries have been greatly disheartened and discouraged by the impatience of older colleagues who were skilled teachers themselves." (W.)

4.—TRAINING STUDENTS AND TEACHING CHILDREN ARE DIFFERENT PIECES OF WORK.

"Certainly not. The teacher has not time to keep abreast of contemporary educational thought and of current thought in his subject as well." (M.)

"The college staff is there to criticize and to help—it is its particular function. The staff of a school is there to teach the children, not a student."

"Ability to teach and ability to help other people to realize their individual capacity in teaching are, in my experience, very often quite distinct." (W.)

"I think that the training of teachers and the teaching of children are two different pieces of work. They are connected, but they cannot be done properly by the same people at the same time." (W.)

5.—TRAINING GIVEN IN SCHOOLS WOULD BE TOO NARROW AND *ad hoc*.

"Certainly not. Experience would be too narrow : it needs the specially trained philosopher to co-ordinate all the educational theories and to relate them to a philosophy of life." (M.)

"Without college training one would most probably approach it from a teaching standpoint, not as a part of personal development. Another danger would be that of working for netball shields, swimming cups, and handwork shows, rather than for good netball, courageous swimming and life saving, and neatness of brain and finger, and general mental and spiritual development." (W.)

6.—WOULD NOT BE SYSTEMATIC, SCIENTIFIC, OR THEORETIC.

"Experience in a good school under guidance of the staff would not in any way be a substitute for training. They would have a multiplicity of aims which would confuse the student. There would be no scientific basis for the study of teaching, and the staff would not have the time to give the necessary attention to her." (W.)

"The student, learning from the demonstrations of the school staff, is at a great disadvantage. She is inclined to be filled with admiration for everything which the staff does. She lacks the practical experience and the knowledge of child psychology which would help her to discriminate for herself." (W.)

"While externals might be picked up, theories would be left to formulate and take care of themselves, and the teaching practice would lack sadly and badly in backing and grounding ; one must build on these. I do not see how personal development would have much chance ; development would be restricted, and very much, to 'shop.' " (W.)

7.—WOULD NOT GIVE IDEALS, VALUES OR A PHILOSOPHY.

"I have seen the aims and ideals of teaching in college, not in school, where the opinion and wishes of an H.M.I. take the place of the goal sought after in college." (W.)

"In college one forms ideals and criticizes other teachers, and the very striving to attain those ideals as distinct from the aims and methods observed even in the best of schools calls forth more enthusiasm and initiative than would otherwise be obtained by a method encouraging imitation through observation." (W.)

8.—WOULD NOT PRESENT VARIETY OF IDEAS OR ENCOURAGE DISCRIMINATION OR ORIGINALITY.

"No school staff is likely to have such a bracing influence as a staff of a training college. Your ideas would be of one type. No one school would present you with the Dalton and Playway methods with the firm conviction that they are both the only way! You would learn more about managing a class, probably, and you would find the first year easier, but I imagine that the benefits would be less ultimately." (W.)

"The school would be biased in some one direction, e.g., P.N.E.U., Dalton Plan, etc. The student would only come within the influence of a limited number of ideas, and would only be able to discuss these ideas with people inclined in a certain direction; she would be bound to a certain loyalty to her school and not entirely open-minded." (W.)

9.—WOULD NOT PROVIDE FOR INDIVIDUAL OPINION OR PERSONAL DEVELOPMENT.

"I certainly think that 'experience under the guidance of the staff' would be ghastly and anything but an adequate substitute for training. If theories and ideals are to be of any use they must get 'under the skin' of every individual before he begins teaching himself." (W.)

"I most certainly do not think that experience in a good school, under the guidance of the staff, is an adequate substitute for training. Your own teaching personality (if there is such a thing!) would be made of little bits of other people's capabilities. I think a student would find it exceedingly difficult to know what to accept and what to reject. Personally, I should feel that I was starting my career 'secondhand.' One of the greatest benefits is, I think, the linking up of theory and practice yourself. To be trained by teachers would mean that this 'linking up' would be done for you." (W.)

10.—TEACHERS SO PRODUCED WOULD BE IMITATIVE AND UNADAPTABLE.

"I was a student teacher in what is considered one of the best schools in the town. I grew to be able to teach *in that school's ways*. Of the wider, deeper significance of teaching I learned nothing whatever. Experience in school is apt to give you good detail of class management, etc., but not of the broad foundations of education that you must work on. In another school the teacher would go to pieces for a time until she picked up the threads of that school's details of management." (W.)

11.—WOULD BE CONSERVATIVE IN OUTLOOK.

"Isn't it Nietzsche who likens thought to the lava coming from a volcano? It comes out liquid and plastic, but on reaching the air cools and solidifies into a hard unchangeable form. People are often exactly like this; especially those who need to work by some system and organization, as teachers. However progressive their early ideas may be, they tend to take on some definite form which becomes with time less plastic and so a teacher may be known as the 'progressive' person who started such and such a method and handed it cut and dried to his associates and successors. Such a person has the most fatal influence on a young teacher." (W.)

"Also the idea is still prevalent in the schools that the older and more experienced the teacher, the better she is; a young teacher is still regarded with a certain amount of doubt, therefore the training would be largely placed in the hands of the older teachers, the thought of which makes one doubt the wisdom of such a course of training." (W.)

12.—WOULD LACK A SENSE OF VOCATION.

"A training in a good school, however thorough and absolutely modern, would not be an adequate substitute for a college training. There would be far too much missed in that case, such as the infinitely greater number of ideas gained there, the ambitions roused by seeing or hearing of the work of others and by a competitive spirit, the feeling of being one of a great and progressive body working for the benefit of mankind as a whole." (W.)

"No, I do not feel that a reversion to the apprenticeship system would be adequate, because of the fresh approach the college offers together with the sense of a period of communal preparation for a vocation." (M.)

13.—CONTACT WITH COLLEGE NEEDS TO BE MAINTAINED AFTER TRAINING.

"It seems to me that it is at the time when students most need help, that is when they have a class of their own, and are wholly responsible for it, that they are cut off from college. If they begin work with an unsympathetic or incompetent head they are often unable to get any help, so that a good deal of the training has little effect because right at the beginning the young teacher finds it impossible to put theory into practice." (W.)

"In conclusion, I do feel that where most help is needed is when teaching begins in earnest after college, and as a rule this is where we are left floundering about with no definite knowledge of what is required of us! Some definite help and supervision should be given during, at any rate, the first year of teaching." (W.)

"The first year out of college, I think, ought to be an extended student-ship, the would-be teacher being placed in a school where the head and staff are in sympathy with modern aims in education, and would be willing to help the student with the many problems she encountered. If it were practicable, it would be more valuable to spend this year under the supervision of college lecturers." (W.)

14.—REFRESHER COURSES ADVOCATED.

"If it were possible, a further six months or year's training after the first year or two of teaching would probably be immensely valuable." (W.)

"I consider that the value of training is greatly advanced if occasional 'refresher' classes can be attended, if it is only a course of two or three lectures on one subject." (W.)

In view of the criticism which the colleges have already had to face, the unanimity on this point is comforting. Although the proposal is the logical development of many of their strictures it is rejected by men and women alike almost without qualification. (Even the writer quoted under 1 above, gives his case away in the last sentence.) One most

severe critic of her own course of training writes : " The second part of 3 I feel is a joke." Another who has attacked her college for being too idealistic says : " It is after all as well to begin from the ideal and try to apply it to the reality." The typical attitude is summed up by one man as follows : " The only possible substitute for a training college is another name for the same thing."

Clearly then the maintenance of a connection with the theoretic aspects of teaching is important during training. This it is, rather than the suggested alternative, which conduces to " wider experience and greater breadth of outlook."

IX.

We proceed now to

QUESTION 4.—HOW FAR IS IT TRUE THAT ONE CAN TEACH EFFICIENTLY WITHOUT BEING TRAINED ?

Consideration of this is provided for in the questionnaire. " Has your experience led you to any generalizations as to the difference between trained and untrained teachers ? " We summarize replies as before :

DIFFERENCES BETWEEN TRAINED AND UNTRAINED TEACHERS.

| | <i>No. of Replies.</i> | |
|---|------------------------|---------------|
| | <i>Men.</i> | <i>Women.</i> |
| 1.—Training gives a wider outlook, truer perspective .. | 2 | 12 |
| 2.—Gives truer educational aims, values, ideals | 2 | 14 |
| 3.—Gives a stronger sense of vocation ; more enthusiasm .. | 1 | 5 |
| 4.—More enlightened methods ; hence a more economical and effective expenditure of energy | 1 | 12 |
| 5.—Trained teachers are more open minded, reasonable, critical and discriminating, adaptable, independent, and enterprising | 3 | 13 |
| 6.—Training means a more scientific attitude ; greater interest in research and in educational problems .. | 3 | 4 |
| 7.—Trained teachers' attitude to children is more interested, understanding, sympathetic and tolerant | 1 | 10 |
| 8.—Trained teachers possess a short cut to experience ; arrive at their best more easily | 4 | 4 |
| 9.—Untrained teachers are fresher in outlook ; less orthodox and less immersed in their profession | 2 | 2 |
| 10.—There is no necessary difference between trained and untrained teachers | 1 | 1 |

1.—TRAINING GIVES A WIDER OUTLOOK, TRUER PERSPECTIVE.

"From my experience I find that trained teachers are 'bigger' people than untrained teachers. They see things in truer perspective, e.g., changing from Standard III to Standard VI does not upset their life. They live in a bigger world—their ability to deal more adequately with school problems, with a smaller expense of energy, leaves them free for the more important questions of life." (W.)

2.—TRAINING GIVES TRUER PROFESSIONAL AIMS, VALUES, AND IDEALS.

"The untrained teachers that I know are very conscientious workers, and work hard. But I think that they are inclined to do the work given them without considering aims and values. For instance, they will work from an English or arithmetic book without criticism, and without adding or altering exercises to suit their conditions. On the other hand, the trained teachers criticize more." (W.)

"We have only one untrained member on the staff in our school. She, of course, has a degree—but is entirely miserable in her job, and I really believe she would have been heaps happier had she trained. Her knowledge seems to be solely centred on her subject—she has no mind towards the development of the children themselves. I don't mean to say that this could have been entirely counteracted by training, but I'm sure it would have helped." (W.)

3.—TRAINING GIVES A SENSE OF VOCATION AND ENTHUSIASM.

"The trained teacher is obviously better than the untrained. His ideals are higher; his discipline is better generally; he teaches much more easily; his 'method' is better; he descends to the pupils much more easily and has more sympathy; he has taken up teaching as a life's work, not because other openings were closed to him." (M.)

"I have an impression that the trained teacher has a greater realization of the part played by the teacher, i.e., in training the citizen of to-morrow—a realization that the teacher does not merely inculcate knowledge (or facts rather), but that she helps to train the child mentally, physically and morally." (W.)

"Judging from my own school, I should say, too, that the certificated teacher has a higher conception of the teacher's vocation. This may be because here the certificated ones are younger and more enthusiastic than the uncertificated." (W.)

4.—TRAINING MEANS ENLIGHTENED METHODS; HENCE THE EFFECTIVE AND ECONOMICAL EXPENDITURE OF ENERGY.

"I have had very little experience of untrained teachers, but I have felt, with the few I have met, that they have insufficient understanding of children's minds, and how they are best appealed to, and fed. Where difficult cases of individuality occur, the untrained teacher is puzzled and upset, and blames

rather than attempts to sublimate, the tendencies of the victim. In some of the rural schools, I have particularly noticed that where there are untrained teachers there are old-fashioned methods of working. Teaching by rule of thumb, and conventional methods, to gain results, accompany the presence of untrained teachers." (*W.*)

"The difference that I have noticed between trained and untrained teachers is that the trained teacher has never to work so hard herself to obtain the same scholastic result as the untrained one, and that the trained teacher's class is almost invariably happier in tone, because the teacher herself is not so worried." (*W.*)

"Trained teachers often deal more successfully with difficult children. Even more important, I think, is the amount of work they get from a class. Very often untrained teachers are satisfied if the room is quiet and no voice can be heard but the teacher's, but in training the student is impressed again and again by the fact that it is when children are active that learning begins." (*W.*)

5.—TRAINED TEACHERS ARE MORE OPEN-MINDED, CRITICAL, ADAPTABLE, ENTERPRISING, ETC.

"I think that trained teachers are much more ready to try new methods and ideas; they are also generally more enthusiastic about their work than untrained teachers—particularly at first—and I certainly think that training gives confidence." (*W.*)

"The untrained man tends to remain closed to new developments in method and to new ideas in education in general, the trained man tends to remain open-minded and more receptive, with a tendency, too, to keep abreast of the times in thought and method." (*M.*)

"I think training makes one more rightly broadminded, it gives a spaciousness within bounds, makes one more tolerant and much more patient—a more reasonable being." (*W.*)

6.—TRAINING PRODUCES A SCIENTIFIC ATTITUDE; INTEREST IN RESEARCH AND IN EDUCATIONAL PROBLEMS.

"The trained people are more willing to be interested in educational problems; the poorer untrained people do not know there are any: e.g., following quotations from the untrained: 'I think this psychology is all rot. If you know your job you know how to keep children in order.' (In justice must say she was a gymnast!) 'All psychology does is to stick labels on to people and to fix them permanently.' (Art mistress, aged 45-50.)." (*W.*)

"Training shows the vastness of the field to be explored, and often is the beginning of a habit of research, which is most necessary if a teacher is to keep a lively interest in her work." (*W.*)

7.—THE TRAINED TEACHER IS MORE SYMPATHETIC, UNDERSTANDING, TOLERANT.

"I have the impression that the trained teacher has a greater sympathy with the child and its difficulties, in consequence of which discipline affords little trouble and petty affairs rarely cause worry." (W.)

"The difference between trained and untrained teachers seems to me to lie not in their work, but in themselves. That is to say, untrained teachers get as good surface results—often better—but their methods are somewhat unscrupulous. For example—untrained teachers often use the shrieking voice and heavy hand with a perfectly free conscience, and advise the trained teacher to do likewise. I believe that method can get you through most difficulties and many trained teachers succumb to the primrose path, but I think they mostly continue to wonder if they ought." (W.)

8.—TRAINED TEACHERS ARRIVE AT THEIR BEST MORE EASILY.

"The trained man begins to be of real value to a staff at least three years before his untrained colleagues. There are of course 'born teachers,' men with a natural gift for the calling, but even this rare specimen can be improved by training and spared a great deal of preliminary 'floundering.'" (M.)

"I think you are happier in your first post for having trained; that when you start untrained you are handicapped—you are absorbed by the detail (often irritating) of school life, and miss the ideals and principles of education; that if you are keen and like teaching, you may acquire something of these in time, but that you are behind, as it were, a person of the same ability and teaching service as your own who has trained." (W.)

9.—UNTRAINED TEACHERS ARE FRESHER IN OUTLOOK.

"Trained teachers are conservative and orthodox in method, untrained picturesque and varied in personality. Unhampered by taboos and traditions, the untrained man experiments more readily—commonly with only partial success." (M.)

"The trained teacher has less difficulty in general management, in co-operation with the staff, and in understanding of school life generally. She is too apt to regard school as a place set apart, whereas the untrained teacher has a fresher mind, and regards teaching and schools as one aspect of life." (W.)

10.—THERE IS NO NECESSARY DIFFERENCE.

"Of the colleagues I most admire some are trained, some untrained. I think that with genuinely cultured women, interested in education, and their own subject, training is not of vital importance. (Of my untrained colleagues three are women of very strong personality and probably unusually gifted). I have known disasters with young trained teachers as well as untrained. I do think that good training should be an effective safeguard against the harm that mediocre personalities might otherwise do." (W.)

Here comment seems almost superfluous. If our witnesses are right, then the Cambridge thesis can only be maintained by interpreting efficiency in the narrowest possible sense (though we should do well to heed the warning not to let freshness disappear beneath the weight of conventional and orthodox efficiency). But since our witnesses are themselves trained teachers and may therefore be biased, it seemed fitting to conclude this section with the following unsolicited contribution from the husband of one of the ex-students to whom the questionnaire was sent.

OPINIONS OF A GRADUATE BUT UNTRAINED SECONDARY SCHOOL MASTER.

"I often realize how much I have missed by not having been trained, particularly when I watch my wife with the children, or talk to her about teaching methods. I think every schoolmaster wants to know how others teach, and what methods they use.

"I once had the good fortune to go for three days to watch methods in another school (on the recommendation of a B. of E. Inspector). The new methods I saw and new ideas I got helped me greatly. I was particularly helped by watching 'the bad boy expert' keeping a dull form interested in mathematics (not my subject). Previously I had had to rely on memories of my own school days and on my own ideas. I had received no guidance from my Head on methods or reading. Sir John Adams' 'The New Teaching' was probably not the wisest choice for an introduction, and A. S. Neill's books, though fascinating, probably increased the difficulties of an inexperienced beginner.

"Not having been trained, I had little idea what standard to expect or how to obtain it, either in work or discipline. My teaching at first was far too much like university lecturing on a slightly reduced plane. There was far too little for the boys to do. I had perforce to accept work I knew to be quite inadequate because I did not know any method except exhortation to get better work. Where the best work was poor, and I had no better guide to standard than memory of my own school days, the punishment of a whole form seemed out of the question, and the punishment of the worst ineffective.

"I received two pieces of advice, no, three, about discipline: (1) From the Head, 'Never threaten what you are not prepared to carry out'; (2) From a colleague, 'You must get among them and smack several heads'; (3) From the Head, that this was not wise."

X.

Our last Question, No. 5:

HAS TRAINING ANY CONTRIBUTION TO MAKE TO LIFE AS WELL AS TO TECHNIQUE?

This has already been answered by implication in connection with the contribution of psychology to personal development, the value

of the theoretic course generally, and the characteristics of the trained teacher. There is one further section of the questionnaire which bears directly on the point, "Did the value of training lie in its direct practical bearing or in contributing to your own personal development?"

DOES TRAINING AFFECT MAINLY PRACTICAL WORK OR PERSONAL DEVELOPMENT?

| | <i>No. of Replies.</i> | |
|--|------------------------|---------------|
| | <i>Men.</i> | <i>Women.</i> |
| 1.—Of value mainly in connection with personal development | 5 | 13 |
| 2.—Personal development in the first place and practical value as a result of this | 2 | 13 |
| 3.—Practical value in the first place and personal development as a result of this | 2 | — |
| 4.—Of value in both connections equally | 3 | 11 |
| 5.—Mainly of value in its direct practical bearing | 7 | 6 |

1.—VALUE LIES MAINLY IN ITS EFFECT ON PERSONAL DEVELOPMENT.

"I have no hesitation in saying that the chief value of my course lay in helping me to form a philosophy of life. The careful studies of such writers as Nunn, Muirhead, Dewey, and Shand have often been an inspiration in deciding policies for action. I have learned to treat the school as a particular type of society." (M.)

"I myself feel more fitted to occupy any niche in life, beside that of teaching. The psychology of salesmanship (I read a book on that recently) is a simple thing to the college trained. I should feel capable of making a success of selling now, if need be, though before I went to college I don't think I should have been much good at a jumble sale even! Several careers are open to the college trained, if teaching fails, or for any other reason. I am sure a student, with a little extra practice, could make a success of managing a shop or a home equally as well as she managed a class!" (W.)

2.—AFFECTS PERSONAL DEVELOPMENT IN THE FIRST PLACE AND PRACTICAL WORK THROUGH THAT.

"The various ideas that I heard of at college are now falling into line and making a harmonious whole, which not only helps my work practically, making it more interesting, more progressive and logical, and easier to grasp, but also has affected my whole attitude to teaching. Having once realized

all that really lies behind teaching, the vital importance of it, the responsibility of forming characters—I cannot treat it merely as a way of earning a salary. That is exactly how I regarded my previous job as a typist, and that, I feel, is how I should have felt about it if I had changed from typing to teaching directly, with no training except in a school." (W.)

"I certainly feel that the greatest value of college training lies in the effect it has on one's own personal development; but this in its turn must be reflected in one's teaching, so that there we see its results, if only indirectly." (W.)

3.—AFFECTS PRACTICAL WORK IN THE FIRST PLACE AND PERSONAL DEVELOPMENT THROUGH THAT.

"I think the value of the training lay mainly in its practical bearing on school work, though a teacher's philosophy of life must be greatly influenced by contact with young life." (M.)

4.—OF VALUE IN BOTH CONNECTIONS EQUALLY.

"The education course affects both practical school work and personal development. It seems to me that much of the theory is useless unless it affects the aims and personality of the teacher. Certain issues are raised throughout the course, which to some extent demand a definite attitude on the part of the student. For example, in psychology, unless one accepts a purposive as apart from a purely mechanistic theory, the whole hope and aim of education falls to the ground." (M.)

"I think the value lies in both. At first, new to teaching, I should have said the value lay in its direct practical bearing on school work. I think that value still exists. Lately, though, I have thought a good deal on life—a disease of my age, I believe. (I live in digs alone.) I have thought again of sentences from lectures, books, discussions provoked by lectures—and in difficult times they help me." (W.)

5.—MAINLY OF VALUE IN ITS DIRECT PRACTICAL BEARING.

Value lies in its practical bearing as a substitute for experience." (M.)

"The value of the training lay almost entirely in its direct practical bearing on school work, hence the number of successful and capable college-trained teachers who appear to be unable to adapt themselves to the community at large and still call forth the adverse criticism of non-teachers. The benefit of the training to the practical work is obvious from the fact that the university student with a wider philosophy of life and complete adaptability in conducting his own life is often a far less successful teacher than his training college brother." (W.)

In the replies to this last question we meet again the sex-difference which has pursued us throughout the enquiry. Women, primarily interested

in personal development, tend to emphasize the value of training in this connection ; men, out for practical efficiency, see more clearly the contribution which training can make thereto. Nevertheless, the number of men's replies falling into categories 1 and 4 above is significant. And we have already amassed in other connections material enough to enable us to answer confidently, "Training, like teaching, is more than a technique ; it is, at any rate to some extent, a life."

XI.

We now attempt, in the light of the evidence before us, to answer shortly the last four of our original questions.

(2) There is no overwhelming recognition of the superior value of the practical course as compared with the theoretical. Though some men's answers support this view, much evidence from women points in the opposite direction. All see the practical course as of great potential importance, though as actually conducted it meets with much criticism. Many regard theory and practice as mutually indispensable.

(3) The suggestion that training should be conducted by the school is unanimously rejected. On the other hand there is a strong demand for more complete participation in the life of the school during the practice period—though not necessarily at the cost of cutting connections with college. In fact many replies suggest that these connections are essential and need strengthening.

(4) The truth or falsity of the view that one can teach efficiently without being trained seems to depend on the interpretation of the word "efficiently." Where efficiency of the highest type is in question, training has apparently an important contribution to make.

(5) Both men and women consider that training has value and importance for "life" as well as for "technique." For women especially the former type of value is greater than the latter.

I wish to acknowledge my debt to Professor Valentine and to all who have contributed to the enquiry.

RÉSUMÉ.LES COURS PROFESSIONNELS DANS LA PRÉPARATION
DES PROFESSEURS.RAPPORT D'UNE ENQUÊTE SUR LES VALEURS RELATIVES (2^E PARTIE).

(2) Pendant le stage pratique il est essentiel que l'étudiant forme des liens étroits avec l'école. Il ne devrait cependant pas se détacher du "college."

(3) La préparation professionnelle peut contribuer d'une façon importante au développement personnel aussi bien qu'à la valeur professionnelle.

Les réponses révèlent une différence bien marquée entre les sexes. Les hommes tendent à mettre l'emphasis sur la valeur professionnelle, le stage pratique, et l'expérience dans l'école même. Les femmes appuient sur l'importance du développement personnel, la préparation théorique (surtout en psychologie) et les rapports étroits avec le "college." Cette différence se complique encore à cause d'une contre-division entre les spécialistes diplômés et les non-spécialistes sans diplôme universitaire

ÜBERSICHT.

KURSE FÜR DIE LEHRERAUSBILDUNG.

(EIN UNTERSUCHUNGSBERICHT ÜBER IHREN WERT.)

II—TEIL.

(2) Während der Zeit der praktischen Ausbildung muss der Student lebendige Föhlung mit dem Leben der Schule gewinnen. Er sollte aber auch seine Verbindungen mit dem Seminar aufrechterhalten.

(3) Die Ausbildung hat einen bedeutenden Beitrag für die persönliche Entwicklung und für die berufliche Tüchtigkeit zu liefern.

Die Antworten fallen bei Männern und Frauen sehr verschieden aus. Die Männer neigen dazu, die berufliche Tüchtigkeit, den praktischen Kursus und die Schulerfahrung zu betonen; die Frauen legen den Nachdruck auf die persönliche Entwicklung, auf theoretische Ausbildung (besonders in Psychologie) und auf enge Föhlung mit dem Seminar. Diese verschiedenartige Beurteilung (durch Männer und Frauen) wird kompliziert durch eine abermalige Unterscheidung zwischen graduierten Fachlehrern und nichtgraduierten Lehrern für alle Fächer.

THE PREFERENCES OF GERMAN PUPILS AS TO SEX, AGE, AND APPEARANCE OF THE TEACHERS.

AN INQUIRY IN GERMAN SCHOOLS.

By MARTIN KEILHACKER

(*From the Psychologisch-Pädagogisches Seminar of the University of
Königsberg, Germany*).

- I.—*Aim and method of enquiry.*
- II.—*Preferences as to sex.*
- III.—*Preferences as to age.*
- IV.—*Opinion as to appearance.*
- V.—*Summary of main results.*

I.—AIM AND METHOD OF ENQUIRY.

THERE are a great many works about the ideal teacher (from the point of view of the adult), but very little research has been made on the ideas that pupils have in this matter. A really satisfactory inquiry into the psychology of the teacher's personality is impossible without such research.

Of the little research about the ideal teacher that has been done from the pupil's standpoint until the present time, the greatest part is English and American in origin. These works are also the oldest that deal with the subject.* In Russia a similar inquiry has been made in the past few years.† In Germany I have myself made, during the last two years, what is so far as I know the first attempt on a big scale in this direction. Any similar works from France, Italy, etc., are unknown to me. In my opinion a most fruitful field is here presented for the practice of the comparative psychology which is especially dear to the present generation. An attempt which I made with pupils from St. Louis in the U.S.A. was not only in the uniformity but also in the variety of the results very instructive. As these various works have been carried

* See the literature referred to in THE BRITISH JOURNAL OF EDUCATIONAL PSYCHOLOGY, Vol. I, Part I, 1931, pp. 70/71, especially Nr. 3, 4, 12, 24.

† M. M. Rubinstein : *Problema učitelja* (*The Problem of Teachers*). Moskau, 1927.

through according to more or less different methods, it is still difficult at the moment to draw comparisons between them all. I should be glad if this essay were to contribute to a preparation for a common study of the question in all countries.

It seemed necessary to me, above all, to find out if, and how far, the immense revolution, spiritual and physical, which takes place in childhood and in youth especially during adolescence, affects the teaching ideal. To give in advance an important conclusion, it is clear that with the development of adolescence a corresponding change in the conception of the ideal type of teacher takes place—i.e., youth at its various stages notices quite different things in a teacher and even desires a quite different type of teacher, which is probably also necessary for their inner development. Not only is the spiritual life of the adolescent a variable quantity, but so also is his conception of the ideal teacher. The one is the cause of the other. The influence of individuality, milieu and type of school is much less important.

It is here a matter of unimportance whether the pupil is right in his conception of and wishes about an ideal teacher or not. Even if his wishes are imperfect and unclear, even if they are objectively false—i.e., if they tend to the detriment of the youth, it is necessary to know them. Every wish signifies in the growth of a soul a power which must be set to account, whether it is absurd or not. It is precisely this peculiar conception of youth which is important and interesting in the question of the ideal teacher, and not even the best and most valuable judgment of the adults can replace it.

In my attempt I used the *essay method*, which seemed to me to be particularly suitable for research in schools for different reasons (the possibility offered for the collection of a great quantity of material in a short time, the avoidance of prejudicing the children by narrowing the question-basis as happens with questionnaires, using a method to which the children are accustomed, etc.), and, indeed, I have got children and youths of all ages, mainly from ten to twenty, to do a written work on this thesis: "*What I would like my teacher to be*" (wie wünsche ich mir meinen Lehrer, as to the girls with the addition: bzw. meine Lehrerin). In order to avoid the danger that the fact of the pupils being in school might prejudice their views, the experiment of letting the children write the work, some of them with and some without signature, some as schoolwork and some as homework, has been made. Moreover, a considerable number of the essays were done in groups under the leadership of a boy or girl without any connection with the school. On the whole, the results were everywhere the same.

The advantages and disadvantages of the method, as well as the closer analysis of the collection of essays, cannot be gone into in greater detail here.*

In *collecting the material* an attempt was made to consider both sexes, every age between ten and twenty, different types of school, different provinces, cities, and provincial towns, etc., and to get at least as many essays from each group as to allow conclusions to be drawn with some degree of certainty. A survey of the collection according to types of school, sexes, provinces, etc., produces the following table :

SURVEY OF THE MATERIAL.
(3,967 pupils' essays.)

I.—TYPE OF SCHOOL AND SEX.

| | Total. | Boys. | Girls. |
|-----------------------------|--------|-------|--------|
| Higher Schools | 3117 | 1814 | 1303 |
| Middle and "Bürger" Schools | 431 | 307 | 124 |
| Elementary Schools | 216 | 108 | 108 |
| Technical Schools | 203 | — | 203 |
| TOTAL | 3967 | 2229 | 1738 |

II.—PROVINCES.

| | | |
|-------------------|-----------------------|------|
| Prussia : | East Prussia | 1615 |
| | Greuzmark | 172 |
| | Lower Silesia | 110 |
| | Hessen-Nassau | 350 |
| Bavaria | | 1651 |
| Saxony | | 50 |
| Oldenburg | | 19 |
| TOTAL | | 3967 |

* Considerations about these questions are to be found in my two papers: *The question of the teacher's personality from the pupil's point of view* (*Die Frage der Lehrer persönlichkeit, vom Schüler aus gesehen*), in *Bayrisches Bildungswesen*, IV, 1930, pp. 338-352, and *The development of the views of children and youths on the subject of "fair"* (*Die Entwicklung des Begriffes "Gerecht" bei Kindern und Jugendlichen*) in *Zeitschrift für Pädagogische Psychologie*, XXXI, 1930, pp. 544-558. A publication covering all the researches will appear in February, 1932, under the title: *Der Ideale Lehrer nach der Auffassung der Schüler.* (Herder.)

III.—LARGE TOWNS, ETC.

| | | |
|--|----|------|
| Large Towns (250,000 inhabitants and over) | .. | 1847 |
| Medium Towns (250,000—20,000 inhabitants) | .. | 1862 |
| Small Towns (under 20,000 inhabitants) | .. | 258 |
| TOTAL | .. | 3967 |

From the wishes and opinions of the pupils which have been collected—and these include the whole sphere of the human relationship between teacher and pupil, in school (teaching, education, physical activity, ordinary human relationship, etc.)—only a small part will here be selected, viz., the wishes as to sex, age, and outward appearance of the teacher, as these are comparatively easy to separate from the whole.

The opinions of pupils as to sex, age, and outward appearance are not a high percentage of all the opinions; while the opinion about teaching and personal relationship reach to 100 per cent (i.e., every pupil expresses his wish and thoughts on this point), only 10—30 per cent of wishes, on the average, relate to sex, age, and appearance. Opinions as to age are double as many (20—30 per cent) as about outward appearance (10—15 per cent), while the opinions as to sex apparently seem to depend above all on the pupil's personal experience in this respect—i.e., whether they themselves at this time or during their earlier school years have had both male and female instruction.

But for their *contents* these opinions are very interesting and valuable too and mirror the notable differences between the ages and sexes of the pupils very clearly.

II.—PREFERENCES AS TO SEX.

Wishes as to the sex of a teacher refer only to girls' schools, for in boys' schools in Germany, at least those for the older pupils, women teach very seldom. The wishes of girl pupils as to whether they prefer a man or a woman teacher differ very greatly at first sight. Girls of some schools or classes choose in most cases a man; girls of other schools or classes, a woman. Sometimes the decision is not quite clear or not unanimous—i.e., a girl pupil in certain cases wishes for a man teacher, in others for a woman teacher. Nevertheless, on closer inspection agreement is very marked. Whether the girls choose a man or a woman depends directly upon certain primary conditions, which, indeed, in some schools may be somewhat varying, and thus raise apparent contradictions, but where they are the same always lead to the same conclusion.

(a) *Reasons why some girls prefer a woman teacher.*

In the main, there is only one reason or, rather one group of reasons, why women teachers are preferred by the girls. It is the desire for a common human relation between teacher and pupil. Women teachers stand by nature in many things nearer to the girls, can understand them better, and as women can give them more. This desire, however, varies among the individual pupils in its intensity, partly according to physical and mental development, partly according to the individual, or for other reasons. In accordance with this varies the choice between men and women teachers.

A very important factor, perhaps the most important, in the decision is the physical-mental development. The older the pupils are, at least between the ages of ten and twenty, the greater is the need for a personal human relation to the teacher, not only for girls, but also for the boys. This is true for the advanced schools in the same way as for the elementary and technical schools. Apparently this is bound up with a very common and profound human need which exists, independently of intelligence and profession, to a greater or lesser degree in youth throughout. But along with this grows a desire among girls to be taught and led by a woman.

It is to be seen from the pupils' essays that the question of the companionship and proximity of a woman, here especially of a woman teacher, constitutes for many pupils, the older they are, a real spiritual need. In this the essays of the different schools agree entirely. In the middle (age thirteen or sixteen) and higher grades (age sixteen to nineteen) girls very seldom decide for a male teacher out of human grounds. In the lower grades (age ten to thirteen) the decision for man or woman teacher is less uniform. Only gradually does the wish—partly conscious, partly unconscious—for a woman's understanding come to full expression and with it the stronger bias in favour of a woman teacher. The following example is characteristic of this development: "I received my first instruction from a male teacher who knew how to penetrate the spirit of such a child as I, a man to whom one could pour out one's heart. As I honoured my teacher and was satisfied with him, although he could often be strict, I had no real idea how instruction from a woman teacher might be, and although I could imagine no pleasanter lessons, nevertheless, I really longed in my inmost self to receive instruction from a woman, a person of my own sex. I wanted a woman teacher who would understand me perfectly, lend an ear to my requests, enter into my questions even if they should not exactly be part of the scheme of the time-table, who would know how to win my whole confidence, to whom I could come with questions, which, perhaps, I could never ask of a male teacher." (Female pupil, 16½ years old.)

Strong differences of individual character are to be found, of course, at all ages, even both extremes; those who want exclusively men or exclusively women teachers are never absent. "For a girls' school I find woman teachers more suitable. A man can never understand the mentality of a girl as well as a woman can. A man stands remote from his class." (Female pupil, 16 years old.) And on the other hand, but less often, "I don't want women teachers at all." (Female pupil, 17 years old.) Between both these extremes lies the great bulk of opinion, sometimes inclining in the one direction, sometimes in the other.

From this general human standpoint and from the desire for the consideration of a woman's nature, the fact emerges that women teachers are, above all, in request for the particular branches of study where especial opportunities are given for the expression of a woman's character—i.e., in the advanced classes above all: class leadership, German (i.e., the mother tongue), biology, and similar subjects. "It is the same to me whether a woman or a man gives the instruction. Only German and the class leadership must be in the hands of a woman." (Female, 18½ years.)

Behind these natural human wishes, which may be in their effect upon education and teaching multiform, any subsidiary reasons for the preference for women teachers sink into the background. The view alone that women teachers are considerably more gentle and less strict is mentioned with comparative frequency. But even this opinion is not unanimous, still less other reasons which are produced at times: the greater vehemence and injustice of a younger teacher, etc. In any case, the young male teacher will be fairly uniformly rejected by girls, especially in the advanced classes, for varying reasons. (See below: "Age.")

(b) *Reasons why some girls prefer a master.*

The reasons which lead to a preference for a master are more numerous and less uniform. Nevertheless, there are some main factors that are evident here, too.

Men are, in the first place, preferred because they are supposedly juster and less moody (nervous) than women. This conclusion is come to by a decided majority. With regard to the considerable part which justice plays in the relation between teacher and pupil, individual girl pupils go so far as to say that because of the supposed greater injustice of women teachers they are hardly suitable for teaching at all. "Women teachers are less suitable for teaching than men because they are moodier and more unjust than masters." (Female pupil, 18 years.)

With the same perception that a man's matter-of-factness is stronger, expressions of opinion indicate that a master is more suitable for certain

subjects. If for a woman teacher the mother tongue and biology are of primary suitability, so, above all, for a man are mathematics, physics, and similar subjects. "For mathematics and physics I must have a man. The sober mathematician manages to teach the rules of mathematics better than a woman." (Female pupil, 18 years.) It is surprising that for history, also, male teaching is desired. But here opinions are divided.

As a rule, it appears that a master is preferred for the special sphere of instruction, especially for matters of method. Their teaching is held to be more interesting, clearer, and more comprehensive.

Moreover, the pupils often vote for a master in view of their capacity to maintain better discipline. Quite instinctively girls have more respect, perhaps, also, more fear of him. Women teachers sometimes have too little energy and are not so prepared to force their way through.

Most striking is the frequent preference for masters in the sphere of physical activity, gymnastics, sport, and school expeditions. Nevertheless, this in general is only true of the lower and to some extent the middle grades where physical activity, and especially that in the form of boisterousness, stands in the foreground. Women are often supposedly too anxious, understand too little about sport, are also sooner concerned whether they will catch cold or spoil their clothes. Reproaches in this direction, in particular, are, indeed, frequent. "For tobogganning one does not put on silk stockings, a fur coat, and a fine, thin skirt. That is certainly no costume for tobogganning. But certainly the teachers had them on." (Female pupil, 13 years.) The need for working off superfluous physical energy is very great, according to the bulk of essays, for girls as well as boys, at the beginning of maturity. Therefore, there is at this time a real preference for men in the sphere of physical activity, as well as of school excursions. In the upper classes, where school excursions, above all, are esteemed for the personal contact, personal companionship, etc., to be had, there the position is reversed and women are preferred.

Psychologically, it should be of especial interest that men and women teachers are not judged by the girls entirely by equal and objective standards, but often by totally different ones, and, further, always to the detriment of women. Examples of these varieties of attitude are to be found in the most varied matters. A man may, and ought to be, stricter than a woman. On the other hand, lesser claims are made on his capacity for understanding. "From a man we naturally expect this also, but not to the same degree." (Female pupil, 18 years.) Outbreaks of temper from a woman are much more severely judged. "A man in a bad temper is not considered by the pupils in his comical aspect to such an extent as a woman who has lost her temper." (Female pupil, 17½

years.) And, what is especially delightful, "He was sometimes simply a little heated, but with a man that is not to be avoided." (Female pupil, 13½ years.)

The same thing holds good in the matter of teaching. "For teaching I prefer a man, because he has a stronger feeling of superiority. A woman must be far surer in her knowledge of facts if one is to feel this superiority." (Female pupil, 17¼ years.)

On the contrary, I have in the whole collection of essays not found a single place where a harder standard is laid on the man or where the weaknesses of a woman is excused—e.g., moodiness with the greater sensitiveness of the female nervous system.

To what extent conclusions may be drawn from these facts as to the psychology of girls and women in general, especially as to the lack of mutual support or the lack of confidence in the capabilities of women, is difficult to say, above all because the conclusive proofs coming from boys with regard to women teachers are wanting in this respect. Nevertheless, this supposition is supported by observations which I have made in other spheres from the same essay material. That the girls show less self-confidence in class than the boys is quite clear from the essays, just as is their lack of mutual support in certain cases. The whole question of the relations amongst the girls themselves as well as between the girls and teacher appear to be more difficult than in the case of boys. The more critical attitude of girls towards women teachers is a symptom of this.

The preferential judgment in favour of men appears nevertheless not to go so far that a good woman teacher would not be preferred to a less good master in general, in so far as it is possible to make a comparison in such cases at all. Anyhow, the girls write more than once: a decision between master and woman teacher depends above all upon the personality of the teacher in question. Apart from this, habit plays a great part. Girls who have only had masters at boys' schools before find it rather comical suddenly to be taught by women. It is the same with girls who for a long time have had only women teachers. Expressions of opinion from both sides lead us to conclude that under conditions which are otherwise favourable girls may be happy in the hands of men as well as of women.

Nevertheless, *this general fact remains: With the increasing age girls prefer women teachers more and more, and notably from ordinary human and not from instructional grounds. In the upper classes, especially for class leadership, for the mother tongue, biology, and similar studies, women are desired.*

III.—PREFERENCE AS TO AGE.

As in the case of sex, here also, the interest of pupils shows itself not only in the quantity of their wishes but just as much in the earnestness, zest, and intensity with which the wishes are presented. In contrast to the differences of opinion on the question: man or woman teacher? as to "age," considerable agreement is to be found. The young teacher, and still more the middle-aged teacher, is unconditionally preferred.*

The ideas "young," "middle-aged," "old (older)," are not always used in the same sense. A teacher in the early thirties will be thought of as young by one pupil, as middle-aged by another. Therefore, in isolated cases it is not always clear what the pupil has meant, since for the majority of wishes exacter definition of age is lacking. But a summary of the expressions reveals a complete and clear picture. Errors are possible in isolated cases, but hardly as to the general consensus of opinion.

In order to avoid all obscurity in the following, the idea "young" for a teacher is taken to mean up to thirty, "middle-aged" from thirty to forty-five, "old (older)" for the teacher over forty-five. A "really young teacher" is of about twenty-five, commonly at the same time with this additional consideration: a teacher in his first years of practical activity. These ideas of age agree in general with the expressions of the pupils themselves.

(a) *Reasons why pupils prefer a young teacher and, above all, a middle-aged teacher.*

The grounds for the preference or rejection of a definite age—it is not only so in the case of sex—seldom lie in the first place in the sphere of teaching. For the pupil it is not only a question of the teacher in the narrowest sense, but, at the same time, of the teacher as educationist and personal example.

To this ideal, according to the opinions of most pupils, the middle-aged teacher answers best. In this, especially for the upper forms, ordinary human questions stand in the foreground, and also questions of discipline more than those of teaching. A summary in detail of the preferences which are alleged as reasons for the choice is in this case unnecessary, and in anything like comprehensive form impossible. On the other hand, the most important groups of reasons at least should be mentioned which lead to the rejection of the older teacher and frequently of the very young teacher as well. They portray, at the same time, the ideal picture from the negative side.

* Older teachers are rejected by the great majority, so, to some extent, are very young teachers.

(b) *Reasons for the rejection of the very young teachers.*

At once it must be stated that there are a great number of pupils who value not only young, but even very young teachers. "If I could choose a teacher I should decide on a very young one." (Male pupil, 15½ years.) Outside this there is a whole sphere of school life as to which the opinion on the average is: the younger the teacher the better. It is the sphere of physical activity, gymnastics, sport, and, to some extent, school excursions. For the same reason the very young teacher has a considerable following, particularly during the transitional state between the lower and the middle classes (preadolescence). Nevertheless, the fact remains, on the whole, that the very young teacher is often rejected.

Amongst the reason which tend to rejection, insufficient capacity for maintaining discipline is cited most frequently, and with the greatest emphasis. "I want a young teacher, but he ought not to be so young that he is not able to force his own way." (Male pupil, 15¾ years.) The real grounds for this incapacity are varying. Partly, it is simply lack of experience. The young teacher does not know how to deal with difficulties which crop up, or he falls into one of two extremes. He is either too kind towards the pupils or too rough. He does not know how to keep the middle way.

Without doubt the difficulties lie not only in the young teachers, but also in the pupils and in other material circumstances. One knows how glad pupils are to take the opportunity to try out their courage on young teachers, above all, on student teachers. Very often that is quite a natural and profound biological trial of strength, which is everywhere found where two parties come into contact for the first time. Every healthy young person acknowledges only a power which he has himself put to the trial.* Or an attempt is here made to break through the link which is acknowledged to be weakest in the whole school organization. That is also easily to be explained psychologically. A pupil speaks of this in a noteworthy manner: "If we get a young teacher it is quite clear that we shall have fun in his lessons." (Male pupil, 15¼ years.) In another case it is often only a matter of provisional instruction. Teacher and pupils know from the start that they will only be together for a short time, perhaps only for a few lessons—opportunity enough to take things not so seriously as usual on the part of the pupils, especially if during this time no tests or testimonials are required. So there are many reasons to make the disciplinary atmosphere between a young teacher and his pupils difficult, without the teacher being directly to blame.

* See E. Reininger: *Über soziale verhaltensweisen in der Vorpubertät (About social conduct in the preadolescence and the literature cited there.)* Wien. 1925.

That various faults in teaching are attributed from their insignificant experience, very easy to understand. Opinions on this point are to be found at all ages, among both boys and girls alike, but they are not very numerous. In particular cases the complaints spread themselves over the whole sphere of instruction. "I don't like young student teachers. They make petty jokes at every opportunity, but lose their patience very easily, and are bad at explaining things." (Male pupil, $12\frac{1}{4}$ years.) "From a young teacher I only like to have German, because one does not learn to speak English properly from such a teacher." (Male pupil, $13\frac{1}{2}$ years.) "They (the young teachers) do not understand mostly how to teach yet and bully the pupils in the class work according to all the tricks of the trade." (Male pupil, $18\frac{1}{4}$ years.)

Really decisive in this rejection, at least for the older pupils, and especially for girls, is the part played by ordinary human motives. The older pupil wants his teacher, above all, to be a leader in the conflict against life. For this purpose a very young teacher is not tried and experienced enough. Both boys and girls want a leader who has already knocked about with life and proved himself in the struggle. "I want a teacher who is not too young, for a person who has lived through much understands another person much easier and better than a young student teacher." (Female pupil, $16\frac{3}{4}$ years.)

This point of view is quite common, both with older boys towards a young man and with older girls towards a young woman, but especially with older girls towards a young man. "I must say I do not find a man very suitable for girls' schools. There mostly is a lack of understanding, especially if he is a young teacher." (Female pupil, $17\frac{1}{4}$ years.) In addition, there are other difficulties of all kinds, difficulties as to who shall be the first to greet the other, and of behaviour in general: is she to be addressed as a "young lady" or as a pupil? But, above all, the older girls do not consider a young man mature enough to be their master and leader. They feel themselves superior to him. "Student teachers should not teach at all in upper girls' classes and be overbearing and preach to girls as children, for in my opinion they are not mature enough." (Female pupil, $16\frac{1}{4}$ years.)

As a matter of psychology here as everywhere the rejection can be traced back to a common motive. The pupil wants to value his teacher highly, admire his capacity, have a practical daily model before his eyes. At the same time, he desires that his teacher shall understand him in matters of soul. These conditions are easily lacking in the relation between older girls and a young man, and rejection is the natural result. In any case, there are also strong moments of contact, above all, of an

erotic nature which one can feel more or less clearly in many essays. On the whole, however, the girls appear to have a very healthy natural judgment on this point, and realize that with such distraction their recompense is poor. "The teacher ought not to be too young, for that would lead to everything else except to serious work." (Female pupil, 19 $\frac{1}{4}$ years.)

(c) *Reasons why older teachers are rejected.*

If opinions and criticism of young and especially very young teachers are divided in such a way that the young teacher is desired by the majority, while the very young teacher is generally but not always declined, the rejection of older teachers is fairly common, at least among pupils between ten and twenty years. In the earlier years the case appears to be somewhat different, but more of that later.

There are some exceptions to this criticism here, also. Greater experience, both of teaching and of life, is recognized by some pupils in stating a preference of older teachers—and a greater sense of justice as well. In the case of other pupils stress is laid on the greater respect which one pays instinctively to older teachers.

Such expressions, however, should not give the false impression that older teachers are not rejected in general, and often in very strong terms. Forty-five or fifty-five is mostly given as the highest age limit. "He should not be older than forty-five, at the most fifty, for then the danger of ossification occurs." (Male pupil, 18 years.) "If the teachers are older than fifty-five they lack temperament. They cannot understand youth." (Female, 17 $\frac{1}{4}$ years.)

According to the essays, there are two groups of reasons, above all, why older teachers are rejected: (1) the ordinary psycho-physical reasons—i.e., opposition between young and old in general; (2) reasons which are determined by the particular circumstances of the present day and which are not favourable to the appointment of an old teacher. These temporary conditions have, moreover, two causes: firstly, the acute opposition between the past and the present; and, secondly, a certain ideal of to-day which prefers youth to age. In the essays the opposition caused by the psycho-physical difference and the friction between past and present above all come to expression, while the standpoint of youth as the ideal age plays a less considerable part.

If one tries to weigh both groups of reasons against each other, in spite of the great opposition between past and present, the psycho-physical deficiencies of an older teacher appear to count for more. Here we have reproaches as they are made in every century and by all

peoples against the older generation, reproaches that, moreover, always have been made.

The complaints that there is a common lack of understanding towards youth are both numerous and, in the highest degree, important. The incapacity for mutual appreciation, simply the natural consequence of different states of bodily and spiritual development, is really greater than is generally admitted, and can never be completely removed. The reminiscences of our own youth cannot help us entirely, for spiritual growth is not static and permanent, but is altered by later experience.

This supposed lack of understanding on the part of the teacher shows itself in all spheres, in teaching, in sport, in ordinary human relationship, but especially in opposition to gaiety and freedom. Old teachers "do not understand a joke;" that is very often repeated. They "cannot distinguish between fun and earnestness," or looked upon from the other point of view: "The young teacher understands much which an old man takes for wildness, obstinacy, and impertinence." (Male pupil, 16 $\frac{3}{4}$ years.) The pupils, indeed, speak with something of justice psychologically when dealing with the standard of old people; they are especially aroused when an old teacher acts as if he had never played any pranks in his youth or been lazy.

The difference in age brings with it a difference in mental interests and, at the same time, a general alienation of sympathies between the teacher and his pupils, while "with a slighter difference of age common interests are still predominant." (Female pupil, 19 $\frac{1}{4}$ years.)

At the same time, this alienation is bound up with a certain rigidity and ordinary cessation of elasticity. Complaints of "senility" and "ossification" are most frequently mentioned. "He must not be an old stick with no understanding for youth." (Male pupil, 20 $\frac{3}{4}$ years.) These older teachers are also peculiarly "pedantic," will not "let you get a word in," "think that their opinion is infallible."

Next to this large domain of misunderstanding stands the lack of capacity for physical activity. Complaints of this are also very frequent, too. For gymnastics and athletics it is demanded that the teacher shall be capable of giving model examples of, and of taking part in, each exercise; he may not merely be there to explain them. The age limit is therefore put still lower for him. "A gymnastic teacher must not be older than thirty-five; for he must be able to take part in the exercises with boys." (Male pupil, 12 $\frac{3}{4}$ years.) In the especially important matter of school excursions this question nowadays plays for every teacher, at least for every class leader, an important part. "The excursions of such-and-such a teacher are fine," "lovely and long," etc., that is almost

the height of fame which a teacher, especially in the lower and middle grades, can earn, and incapacity in this respect is difficult to atone for. Without a certain and by no means inconsiderable ability to share in the physical activities it is hopeless. "On excursions we cannot ask of an old lady that she should run 20-25 kilometres with us or that she should sleep in shelter huts in beds which are certainly uncomfortable." (Female pupil, 17½ years.)

Up to a certain degree the many complaints of "exhausted nerves" belong to the same sphere. "As a result of years of teaching old teachers are mostly nervous and of all bad things in school life the worst is to have to work together with a nervous teacher." (Male pupil, 16¾ years.)

As a consequence of all these circumstances: the decline of physical activity, especially the growing deficiency in sight and hearing, shattered nerves, etc., arise the numerous difficulties of discipline, especially in the middle classes. One can hardly expect youth to be discerning on this point. One pupil writes very reasonably in this case: "My opinion is that older men should only teach in upper classes, for younger boys have no power of discernment." (Male, 15¾ years.)

Considering these great difficulties between pupil and old teachers which become, as age increases, on the average ever greater, one has to ask oneself whether the average teacher—exceptions prove the rule—is only suitable for a certain limited period of his life for the profession of teaching, in the sense in which one pupil writes: "It seems to me that every teacher as well as every man (*sic*) has to undergo development and change, that the good teacher (as such) is only one part of this development; therefore, he is only for a definite, limited time of his life suitable for this purpose, assuming that he has the other requisite qualities." (Male, 19 years.)

These psycho-physical contrasts, as we have already indicated, become still more acute through the differences between past and present. The older teacher appears to these German pupils often as the representative of a time which is not only estranged from youth, but is directly antagonistic to it. Two worlds separated by the enormous changes of the last decade in all spheres of mental and material life; above all, divided through world war and revolution, jar on each other. Over the incapacity of old teachers to understand precisely this present, this "modern" youth, complaints are repeatedly made. What especially arouses the pupils is if one grumbles in every lesson that youth is not what it was. Modern youth is, as a rule, by no means conscious of guilt; on the contrary. The older teachers "can no longer understand the sensibilities and ideals of the youth of to-day. They grew up in a time in which

they had not yet such cares about their Fatherland as the youth of to-day has." (Male pupil, 15 $\frac{3}{4}$ years.) Above all, the old, strong authoritative attitude of the old teachers is resented.

All these differences of two periods and two worlds, which are at first and most strongly noticed in personal relationship and in education, show themselves once more in another form in all spheres of teaching. The greater teaching experience which is admitted of the older teachers by many pupils is by the majority considered more than equalized by methods which are out of date. With very few exceptions the new movements of school reform—co-operative teaching (*Arbeitsunterricht*), considerations of modern materials, etc.—are strongly appreciated by the pupils and not seldom passionately demanded.

In the isolated branches of study it is no better. Complaints are, above all, made against the out-of-date teaching of German, natural sciences, and history. "For essays they (the old teachers) give out-of-date themes and, with the greatest relish of all—proverbs. The style must be richly adorned with adjectives and the writing regularly sloping." (Female pupil, 15 $\frac{3}{4}$ years.) "An old teacher teaches only out of his own time. It always pleases me if a teacher of history tells us something of to-day. An old teacher, on the other hand, cannot tell much of to-day, and he always runs away from it. The old people always think back to their own time." (Male pupil, 16 $\frac{3}{4}$ years.)

(d) *Dependence of the ideal teaching age upon the age of the pupils.*

Despite the great unanimity of the pupils as to the ideal age of the teacher (young and especially middle-aged teachers) a certain shifting of opinions appears, and especially in relation to the pupil's age. That the young teacher, including the very young one, finds many adherents in the pre-adolescent stage has been already mentioned. With increasing age the pupil puts the ideal age of the teacher higher.

Between childhood and youth an especially clear reversal of wishes completes itself. A fifteen years old girl writes: "In the lower classes I have always wanted an elderly man or woman as teacher, and they had to be very friendly so that I felt at home just as with my mother and father. And then the work goes very easily and without constraint. Now I want a very young mistress who is heart and soul with her class." The girl gives in this, at the same time, the clearest declaration of the child mind. She feels with an old teacher as she does at home with her father and mother.

For children, apparently, there are only two groups of people: children and adults ("the grown ups"). The child, above all, works

from his own experience, from his nearest surroundings, and, in particular, from a comparison with his home and parents. Their age is at the same time the ideal age of the teacher. Declarations of this effect are not numerous enough in the essays to enable us to speak confidently. Nevertheless, such a conclusion is supported by observations from daily life. On the other hand, children seem to be also especially adaptive. They can come to terms with every teacher, it does not matter whether young, middle-aged, or old, if he only knows how to get on with them in other respects.

IV.—OPINIONS AS TO APPEARANCE.

(a) *General aspects.*

Of the three aspects—sex, age, appearance—the wishes expressed by pupils about the appearance of the teacher (size, figure, clothing, etc.) are the least numerous and important. Nevertheless, they should not be considered lightly. For 10—15 per cent of all pupils give an opinion that the outward appearance of the teacher is of importance for them. The considerable size and the contents of many of the essays devoted to this also testify to its importance.

Expressions to the contrary—that the appearance of the teacher is of minor importance—are to be found both with boys and girls. However, that is by no means the normal attitude of pupils. On the contrary, the pupil wants, as far as possible, to have an ideal in the outward appearance of the teacher before his eyes. On closer inspection of this ideal in the different ages and in both sexes considerable differences exist. Nevertheless, enough common wishes remain, which constantly reappear.

Both boys and girls, as a rule, desire their teacher, man or woman, to be big, of a good figure, and athletic. "A big, powerful figure." (Male pupil, 16½ years.) "Really big and considerable." (Female pupil, 11 years.) "Not so small as we are ourselves." (Female pupil, 14½ years.) In this last expression itself the typical attitude of a child is best seen. The child sees in the grown-up the aim of its own desires. It would itself like to be big and grown up and requires the same of its teacher. On the other hand, the physical ideal of the present generation is here to be found: "Very slim and agile." (Male pupil, 15 years.) "Slim, athletic figure." (Female, 18¼ years.) The small and fat cut no ice. "If a teacher needs two chairs he makes himself, in my eyes, at least, ridiculous." (Male pupil, 17½ years.)

Careful dressing and, to a certain extent, modern clothing, are clearly appreciated. Negligence in this direction is sharply condemned: "My teacher should not be untidy; he should consider his person.

His tie should not always hang too crooked nor his trousers lack buttons, etc." (Male pupil, 14 years.)

Just as sharply vanity and extravagance are noticed and are made the subject of disparaging, often justified, observations. The girls especially maintain that it sets a bad example. "The woman teacher ought to dress with taste, but not conspicuously, nor should she during the lesson use cosmetics, for that is contagious for the girls." (Female, 16½ years.) Trimness, simplicity, dignity is, on the whole, both for girls and boys, the ideal of outward appearance.

(b) *Sex differences.*

Nevertheless, the wishes of boys and girls show some interesting variations, even in the matter of style. The assertions of the girls are, on the average, more extensive, more profound, and complicated. The boys, too, require their teachers to be of pleasant appearance and well dressed, but their wishes are not so detailed. Expressions like "well-cared for hair" (also with reference to male teachers), "faultless teeth," "hands long and slim," "lovely eyes," "pleasant voice," and especially "interesting appearance," which are very frequent among girls, are seldom to be found from boys. The boy is satisfied with a "good," "clean," perhaps "elegant" suit on the part of his teacher. The girl desires, in addition, that he should wear a tie suited to his clothing." (Female pupil, 14 years.) In general, the æsthetic standpoint plays a far greater rôle for the girls than for the boys. The boys, on the other hand, lay more stress on strength and health.

Moreover, in all these descriptions one has the impression that a girl much more than a boy is strongly bound to these external things, namely, that these things are not merely external but have a deeper relation to personality for her. A girl lives, to to speak, not only from within, but in an outward shell as well. A boy (and a man) to whom appearance and clothing are in a similar way important tends easily to empty dandyism; for a girl (and a woman) such matters are part of the being itself. To what extent these things reach, and how much the outward appearance is taken for the being itself, is shown more clearly in the following:

Both boys and girls require their teacher to be dressed up-to-date, but for a girl modern or old-fashioned clothing is, at the same time, so strong an expression of the inner being that one is prepared for this sentence: He who is dressed in an old-fashioned way has also out-of-date opinions, and is rejected not so much because of his clothing as of his out-of-date personality. "In opinions about clothing, the theatre, and the

cinema, she must be of one accord with the pupils, otherwise there can be no unity of teacher and pupils." (Female pupil, 16 $\frac{1}{4}$ years.) Or again, "It often happens the girls wear bobbed hair, modern clothes, shoes, and stockings, and the teacher is dressed in the mode of the last century. The contrast between teacher and pupil is then too great. The teacher must suit herself in this case to the pupils so that the picture harmonizes." (Female pupil, 17 years.) Everywhere we have the same thing. Apparently, purely external things like clothing give a similar impression as things of the mind, like the theatre. Concord in appearance and in clothing is so important that the harmony or disharmony of the class may depend upon it. At bottom, it is a matter of the unity of outlook on life between teacher and pupil. This is unconditionally required by boys and young men; too, but for the girls that includes harmony of stockings and shoes. In none of the essays from boys have I found a similar statement.

Further, in a third point, we seem to find a typical difference, viz., the greater diversion created for girls by outward appearance, and this can also be regarded as a proof of its great significance. Quite often one finds points in the girls' essays such as this: "My teacher ought not to be particularly pretty because then I cannot attend, for I cannot help watching her." (Female pupils, 15 years.) "She ought not to dress too conspicuously nor powder too much nor paint and constantly attend to her hair, since thereby she only distracts attention from the lesson and draws it on to herself." (Female pupil, 16 $\frac{3}{4}$ years.) "The teacher's clothing ought not to have too extraordinary a cut, over which one can have fun for hours." (Female, 18 years.) In this case, too, there is no parallel to be found in the boys' essays.

(c) *Differences with age.*

In the style of the descriptions, differences at different ages reveal themselves to a considerable extent. Particularly in the lower forms a considerable amount of description is to be found which involuntarily reminds one of police court descriptions, having some character—in particular a teacher—in view of some other acquaintance as the model. "He ought to have a parting, blue eyes, to be 5-ft. 8-ins. in height, to have dark hair, patent leather shoes, a blue suit, a blue hat, white stiff collar, a bow tie, black stockings, white shirt and waistcoat." (Male pupil, 13 $\frac{1}{4}$ years.) Or, "She must look pretty, be bobbed, have black eyes..." (Female pupil, 13 $\frac{1}{2}$ years.) In the upper classes such descriptions become rarer without, however, quite disappearing. Instead enters on the scene a more abstract, more generalized ideal which the pupils require of the teacher.

The quality of the æsthetic and social-ethic ideal alters with age. Within the æsthetic ideal we have a perfectly clear development from the more dollish to a simple, dignified beauty. "I like her to be beautiful, to have lovely blonde hair, blue eyes, fine features, and to be generally beautiful." (Female pupil, 11 years.) "She is tall and thin, not at all attractive, but she has lovely eyes. Her clothing is of a simple dignity." (Female pupil, 19½ years.) Similarly, a development shows itself from valuation of the more robust external aspect to a spiritual valuation and respect on the ground of this outward appearance. "The teacher must be of big and powerful figure so that the biggest and strongest pupils have respect for him and obey him." (The pupil speaks here in the main about the middle classes. Male, 17½ years.) "The teacher must create respect through his personality alone." (Female pupil, 16¾ years.) "A personality through its outward appearance alone." (Male pupil, 17¼ years.)

In the same manner differences characteristic of age show themselves in further groups of reasons which are very frequently cited, on the one hand, aptitude for gymnastics and sport; on the other hand, the significance of external appearance for education. While the first point of view is mostly to be found in the lower and middle grades, the second is cited as a rule first in the middle and then more and more frequently in the upper classes. In the upper grades it plays next to the social-ethical the most important rôle. "Everybody must go about reasonably dressed, the teacher, too. He ought not to say: 'That is simply for the pupils.' The teacher ought to know in this way, too, that he is a model for the pupils, and they take their example from him." (Male pupil, 18½ years.)

V.—SUMMARY OF MAIN RESULTS.

(1) *In General.*

The ideal type of teacher changes with the physical and mental development of the pupil.

(2) *Sex.*

As they get older girls prefer women teachers more and more, especially for class leadership, German (mother tongue), and biology. The fact emerges that in this choice common human relationships count for more than teaching qualifications, and this fact becomes more important as the pupils grow older. Simply for teaching qualifications men teachers are often preferred, especially for mathematics, physics, and similar studies.

(3) *Age.*

The young and, above all, the middle-aged teacher is unconditionally preferred by boys as well as by girls. Older teachers are rejected by the great majority, so are also, to some extent, "very young" teachers.

(4) *Appearance.*

Opinions over outward appearance are clearly dependent upon the age and sex of the pupil. The wishes of the girls are not more numerous, but more profound and complicated, than in the case of boys. For older pupils, boys as well as girls, the ethical and educational value of the outward appearance plays a greater part than the direct pleasure in these external matters.

Résumé.

LES PRÉFÉRENCES DES ELÈVES ALLEMANDS POUR LEURS PROFESSEURS.

Les études faites jusqu'ici sur la psychologie du professeur ont ordinairement le défaut de ne considérer que le point de vue de l'adulte. La conception du professeur idéal n'a cependant rien d'absolu, elle dépend plutôt du niveau de développement de l'âme juvénile sur lequel il doit exercer son influence. Il est donc nécessaire de connaître aussi les désirs et les opinions des élèves au sujet du professeur idéal. Cet article donne les résultats d'une telle enquête dans des écoles allemandes (environ 4,000 élèves). Faute de place on ne peut présenter ici qu'un extrait de l'enquête complète, et l'on choisit les opinions des élèves sur le sexe, l'âge et l'extérieur du professeur puisque ceux-ci se laissent le plus facilement déduire de l'ensemble. Voici les points principaux qui en ressortent :

(1) *Généralités.*

La conception du type idéal de professeur varie selon le développement physique et psychologique de l'élève.

(2) *Sexe.*

A mesure qu'elles avancent en âge les jeunes filles (il manque le matériel d'une comparaison avec les garçons puisqu'en Allemagne ils n'ont que des professeurs hommes) préfèrent plutôt des professeurs femmes surtout pour la direction de la classe, la langue maternelle et les sciences naturelles. Ce ne sont pas des facteurs pédagogiques qui déterminent cette préférence mais des causes humaines générales qui, avec l'âge, jouent un rôle de plus en plus important. Pour des raisons purement pédagogiques au contraire elles préfèrent souvent des professeurs hommes pour les mathématiques, la physique et d'autres sujets analogues.

(3) *Age.*

Les garçons aussi bien que les jeunes filles préfèrent définitivement le jeune professeur et plus encore le professeur d'un certain âge, tandisqu'ils rejettent, à quelques exceptions près, le vieux professeur et très souvent aussi le " tout jeune " professeur.

(4) *Extérieur.*

Les opinions sur l'extérieur du professeur dépendent évidemment de l'âge et du sexe de l'élève. Celles des jeunes filles ne sont pas plus nombreuses mais plus profondes et plus variées que celles des garçons, pour les élèves plus âgés, garçons et filles, la valeur éthique et pédagogique du professeur a plus d'importance que le plaisir immédiat que produit un bel extérieur.

Auszug.DIE VORLIEBE DEUTSCHER SCHÜLER FÜR IHRE LEHRER IN
BEZUG AUF GESCHLECHT, ALTER UND ÄUSSERE ERSCHEINUNG.

Die bisherigen Untersuchungen über die Psychologie der Lehrerpersönlichkeit leiden in der Regel daran, dass sie nur von der Psychologie des Erwachsenen aus gesehen sind. Der „ideale Lehrer“ ist aber keine absolute Grösse an sich, sondern ist abhängig von der Entwicklung des jugendlichen Seelenlebens, auf das er wirken soll. Es ist deshalb nötig auch die Wünsche und Anschauungen der Schüler über den idealen Lehrer zu kennen. Der vorliegende Aufsatz bringt die Ergebnisse einer entsprechenden Untersuchung an deutschen Schulen (c. 4,000 Schüler). Aus Raumangel kann hier nur ein Ausschnitt aus der gesamten Untersuchung gegeben werden und zwar werden dafür die Wünsche der Schüler über Geschlecht, Alter und äussere Erscheinung des Lehrers gewählt, weil sich diese verhältnismässig leicht aus dem Ganzen herauslösen lassen. Die wichtigsten Ergebnisse, die sich dabei zeigen, sind folgende:

(1) *Allgemein.*

Die Auffassung vom Idealtyp des Lehrers ändert sich mit der körperlich-seelischen Entwicklung des Schülers.

(2) *Geschlecht.*

Mit zunehmendem Alter ziehen die Schülerinnen (Vergleichsmaterial von Schülern fehlt, da an den Knabenschulen in Deutschland in der Regel nur männliche Lehrkräfte unterrichten) immer mehr die weiblichen Lehrkräfte vor, besonders für Klassenleitung, Deutsch, und Biologie. Bestimmend für diese Entscheidung sind nicht unterrichtliche, sondern allgemein menschliche Gründe, die mit zunehmendem Alter der Schüler eine immer grössere Rolle spielen. Aus rein unterrichtlichen Gesichtspunkten hingegen werden vielfach Lehrer vorgezogen, besonders für Mathematik, Physik, und ähnliche Fächer.

(3) *Alter.*

Der junge Lehrer und noch mehr der Lehrer in mittleren Jahren werden unbedingt vorgezogen, sowohl von Knaben wie von Mädchen. Der alte Lehrer wird nicht ausnahmslos, aber mit grosser Mehrheit abgelehnt, oft auch der „ganz junge“ Lehrer.

(4) *Äusseres.*

Die Ansichten über die äussere Erscheinung des Lehrers sind deutlich abhängig von Alter und Geschlecht der Schüler. Die Wünsche der Mädchen sind nicht zahlreicher, aber eingehender und differenzierter als die der Knaben. Für die älteren Schüler, sowohl Knaben wie Mädchen, treten vor der unmittelbaren Freude an der äusseren Erscheinung die ethischen und erzieherischen Werte des Äusseren mehr in den Vordergrund.

THE EFFECT ON INTELLIGENCE OF CROSSING EUROPEAN STOCKS.

By RUSSELL MUNDAY.

- I.—*Nature of the enquiry.*
- II.—*Method of measuring intelligence.*
- III.—*Comparison of intelligence of mixed and unmixed children.*
- IV.—*Comparison of mixed and unmixed subdivided according to sex.*
- V.—*Effect of varying the proportion of "Northern" or "Southern" grandparents.*
- VI.—*Conclusion.*

I.

THIS investigation was carried out by the writer in Buenos Aires from September, 1929, to November, 1930. It was suggested to him by Dr. L. F. Richardson, F.R.S., whose help then and later has been of the greatest value in recording the results. The scope of the inquiry was to see what effect, if any, the crossing of the various European stocks had on the intelligence of the resulting children. Ten English schools were visited in the city of Buenos Aires, three of these being boys, five girls, and two mixed schools. The total number of children tested was 308, of which 191 were of unmixed and 117 of mixed stock. A child was counted as mixed if more than one nationality was represented among its four grandparents; on the other hand children born in South America with all four grandparents (*say*) German, were counted as German and unmixed. The schools were of the English secondary school type, and all but two of them sent in candidates for the School Certificate Examination. They had, however, no kind of entrance examination and this, coupled with

the fact that their fees varied considerably, ensured that the sample of children tested was a natural and representative one. At each school the principal selected all the mixed pupils between the ages of nine and sixteen inclusive, together with an equal or greater number of unmixed, the latter being chosen quite at random. Care was taken to exclude any who might be handicapped by a deficient knowledge of the English language.

II.

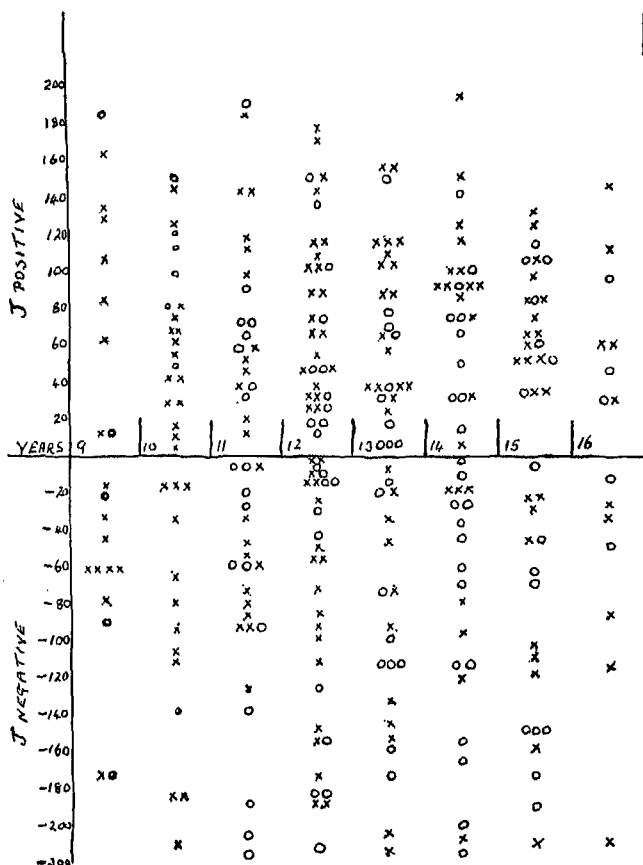
The children were then tested personally by the writer by means of the "Columbian Mental Test" ("Group Tests," by P. B. Ballard, sixth impression, chapter XIII), minor alterations being made in the questions to suit local conditions. It may be suggested that tests of this nature tend to test acquired knowledge rather than innate ability, although they have been developed for over twenty years now with this latter end in view. Even if this supposition were true, the ability to acquire knowledge is itself a test of intelligence where the children have equal opportunities as is the case of the mixed and unmixed children tested in this investigation. It was only possible to pay one visit to each school, but when the six tests given were divided into two groups of three each there was found to exist a correlation coefficient of .8 between them. The results when shown to the principals afterwards were found to agree very nearly with their own estimates of their pupils' ability.

FIGURE I.

| <i>Years.</i> | <i>Number of Children.</i> | <i>Mean Score.</i> | $\sigma = \sqrt{\frac{\sum d^2}{n}}$ |
|---------------|----------------------------|--------------------|--------------------------------------|
| 16 | 15 | 78.7 | 13.8 |
| 15 | 40 | 74.6 | 12.5 |
| 14 | 45 | 71.2 | 11.8 |
| 13 | 48 | 69.1 | 15.3 |
| 12 | 63 | 64.3 | 14.5 |
| 11 | 42 | 53.1 | 15.2 |
| 10 | 34 | 48.5 | 15.6 |
| 9 | 21 | 43.0 | 17.9 |

Figure I shows the mean score and the standard deviation from that mean for each year separately.

FIGURE II.



X=Unmixed.

O=Mixed.

Each child's intelligence was measured in terms of the standard deviation of his own year. This was done by using the formula $J = \frac{j - m}{\sigma} \times 100$, where j was the child's actual score in the test, m the mean score for its year, and σ the S.D. from that mean. The rather formless scatter obtained in Figure II shows the extent to which this has been successful in eliminating the factor of age.

III.

In Figure III is shown a comparison of mixed and unmixed children.

FIGURE III.

| | <i>Unmixed.</i> | <i>Mixed.</i> | <i>Total.</i> |
|----------------------|-----------------|---------------|---------------|
| <i>J</i> positive .. | 108 | 57 | 165 |
| <i>J</i> negative .. | 83 | 60 | 143 |
| TOTAL .. | 191 | 117 | 308 |

The unmixed show more children with *J* positive (i.e., "above the average") than the mixed, but the figures are not widely disparate. The tetrachoric correlation coefficient calculated from the data of Figure III is only .12 with a probable error of .06 (Pearson's Tables for Statisticians), while testing for independence by the formula :

$$X^2 = \frac{(ab - bc)^2 (a + b + c + d)}{(a + d)(c + b)(a + c)(b + d)}$$

we have $X^2 = 1.8$, which, with only one possible degree of freedom, gives *P* between .1 and .2 (Fisher, *Statistical Methods*, Table III). Both tests thus support the theory that the data of Figure III show independence. For readers not familiar with this terminology it may be said that X^2 is the standard deviation of the figures given from those expected arithmetically and that *P* is the probability that X^2 may exceed any specified value. As X^2 increases from 0 to ∞ , *P* diminishes from 1 to 0. If *P* is below .05, X^2 is considered too high to be explained by the hypothesis tested. In this case the hypothesis was that mixing had nothing to do with the range of *J*, and as *P* is over .05 it is considered that this hypothesis is verified.

IV.

FIGURE IV.

| | <i>Unmixed.</i> | | <i>Mixed.</i> | |
|--|-----------------|---------------|---------------|---------------|
| | <i>Boys</i> | <i>Girls.</i> | <i>Boys.</i> | <i>Girls.</i> |
| <i>J</i> positive .. | 51 | 57 | 26 | 31 |
| <i>J</i> negative .. | 38 | 45 | 38 | 22 |
| <i>J</i> + <i>ve</i> ÷ <i>J</i> - <i>ve</i> .. | 1.34 | 1.27 | 0.68 | 1.41 |

Figure IV shows the mixed and unmixed groups subdivided according to sex ; in three cases the proportion of *J* positive to *J* negative is roughly the same, but in the fourth, that of the mixed boys, the proportion is strikingly lower. The two highest categories are the unmixed boys and

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the mixed girls and one might suppose that parents taken from these two categories might have more intelligent offspring than parents coming from the two lowest categories. Figure V does not bear out this supposition.

FIGURE V.

| | <i>Unmixed father mixed mother.</i> | <i>Mixed father unmixed mother.</i> |
|----------------------|---|---|
| <i>J</i> positive .. | 8 | 12 |
| <i>J</i> negative .. | 8 | 9 |

However, subdivision has now reduced the numbers of examples to too small a group to be of much practical value. Tetrachoric correlation coefficients were calculated for the data of Figures IV and V and insignificant coefficients were obtained.

V.

FIGURE VI.

| <i>Number of "Northern" grandparents.</i> | 0 | 1 | 2 | 3 | 4 | <i>Total.</i> |
|---|----|---|----|----|-----|---------------|
| <i>J</i> positive | 5 | 1 | 29 | 8 | 120 | 163 |
| <i>J</i> negative | 6 | 1 | 31 | 8 | 99 | 145 |
| TOTAL | 11 | 2 | 60 | 16 | 219 | 308 |

The children were here classified according to the number of "Northern" grandparents they possessed; the following nationalities constituted the northern group, British, Dutch, German, Austrian, Scandinavian, American of "Northern" descent. Testing for independence we have $X^2 \approx 1.12$, which, with four degrees of freedom, gives P between .9 and .8. That is to say that as P is much greater than .05, the standard deviation of these figures (X^2) from those expected arithmetically is adequately explained by the hypothesis tested, namely, that the number of Northern grandparents did not effect the range of J .

FIGURE VII.

| <i>Number of "Southern" grandparents.</i> | 0 | 1 | 2 | 3 | 4 | <i>Total.</i> |
|---|-----|----|----|---|----|---------------|
| <i>J</i> positive | 125 | 6 | 28 | 2 | 5 | 166 |
| <i>J</i> negative | 97 | 8 | 30 | 1 | 6 | 142 |
| TOTAL | 222 | 14 | 58 | 3 | 11 | 308 |

This was repeated with "Southern" grandparents (i.e., French, Belgian, Spanish, Portuguese, Italian, American of "Southern" descent). In this case $X^2 = 2.46$ and P lies between .7 and .5. So that the X^2 method of testing shows probable independence of the number of either Northern or Southern grandparents.

Several other comparisons were made, such as the crossing of Northern male with Southern female and *vice versa*; the effect of any particular nationality as compared with any other, etc; but the fewness of the numbers treated in these sub-divisions robbed the results, which invariably tended to show independence, of their value.

The writer found that a small majority of teachers in Buenos Aires were of opinion that mixed children were on the whole "brighter" than the unmixed, of the minority, some held the opposite view, while some thought it made no difference.

VI.—SUMMARY OF RESULTS AND CONCLUSIONS.

(a) The results of this enquiry are mainly negative in character. Neither the nationalities of the grandparents nor the ways in which these nationalities were mixed seem to have had any particular effect on the grandchildren. The general intelligence of the mixed children was slightly below that of the unmixed, but individuals were as highly placed, and it would not be surprising to find this position reversed if the number of children were doubled.

(b) From the sample of children taken, mixing would appear to raise slightly the standard of intelligence of the girls, but to lower considerably that of the boys. This is possibly due to the insufficiency of the number tested.

(c) The proportion of Northern or Southern grandparents seems not to have affected the intelligence of the grandchildren.

(d) The general inference, therefore, to be drawn from this inquiry, with its numbers as they are, would seem to be that the crossing of European stocks has very little effect on the intelligence of their descendants.

RÉSUMÉ.

L'INFLUENCE SUR L'INTELLIGENCE D'UN CROISEMENT DE SOUCHES EUROPÉENNES.

On fit à Buenos Aires une enquête au sujet de l'effet d'un croisement des diverses souches européennes sur l'intelligence des enfants qui en résultèrent. On examina 318 enfants, dont 117 de race mélangée. Dans l'ensemble ceux de race pure montrèrent des résultats légèrement supérieurs, à ceux de race mélangée, mais lorsqu'

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on examina séparément les deux sexes on trouva que le croisement éleva légèrement le niveau d'intelligence des filles tandisqu'il baissa considérablement celui des garçons. Ceci a pu résulter de ce que le nombre qu'on examina n'était pas assez élevé. La proportion des grands-parents du nord ou du sud ne paraît pas avoir eu d'effet sur l'intelligence des petits-enfants. Les résultats étaient donc de caractère plutôt négatif.

ÜBERSICHT.

WIE SICH DIE MISCHEHE ZWISCHEN ANGEHÖRIGEN VERSCHIEDENER EUROPAISCHER VOLKSSTÄMME AUF DIE INTELLIGENZ AUSWIRKT.

In Buenos Aires wurde untersucht, wie sich Mischehen zwischen Angehörigen verschiedener europäischer Volksstämme auf die Intelligenz der Kinder auswirken. 308 Kinder wurden untersucht, von denen 117 aus Mischehen stammten. Im grossen und ganzen zeigten die nicht aus Mischehen stammenden etwas bessere Resultate als die anderen; aber als die Ergebnisse nach dem Geschlecht der Versuchspersonen getrennt ausgewertet wurden, fand man, dass die Kreuzung das Intelligenzniveau der Mädchen etwas hob, das der Jungen dagegen beträchtlich sinken liess. Die Ursache liegt wohl darin, dass die Zahl der Versuchspersonen nicht gross genug war. Ob die Grosseltern aus dem Norden oder Süden stammten, schien keine Wirkung auf die Intelligenz der Enkelkinder zu haben. Das Ergebnis war danach im wesentlichen negativ.

AN APPLICATION OF MENTAL TESTS TO UNIVERSITY STUDENTS.

By H. D. JENNINGS WHITE.

(From the Department of Psychology, University College, London).

PART II.

V.—*An enquiry into the cause of the discrepant cases by a general questionnaire.*

VI.—*Some causes why students who did well in the test subsequently failed in their academic work.*

VII.—*Summary of results and recommendations.*

V.

GENERAL QUESTIONNAIRE.

THE purpose of this questionnaire was to discover the reasons why some students did well in the "general intelligence" test and yet failed at a subsequent examination (such students are called "the discrepant failures" and are signified by *dF*), while others who did badly in the test did well in the examination ("the discrepant distinguished" signified by *dD*).

The following are the results of this questionnaire in detail question by question :

1.—Why do you come to college?

This question was intended to bring out the kind of general motive, or lack of motive, which underlies the behaviour of the student in college.

The answers can be roughly classified as follows :

To earn a living.—This implies no particular interest in the work as such. The main ultimate motive is *economic*.

To promote vocation, profession, career, etc.—The main ultimate interest is *social service* (or possible self-aggrandisement).

To obtain a degree.—Implies a narrow, specialized aim : *academic, acquisition*.

To learn, study.—Implies main interest is in the subject studied. *Curiosity, a desire for knowledge.*

General Education.—College life (herd instinct), broaden outlook, all-round *self-development*. For example: "To gain knowledge of people." "To gain experience." "To finish education." "To learn, and also for the college life." "Because I thought I should like it."

Because sent.—Implies no personal choice or dynamic in the work. The dynamic comes from *parent* or guardian—e.g., "Because I was sent." "Arranged for me." "Father's personal wishes." "Family wanted me to."

No motive or generally weak motives.—e.g., "Do not know why." "Various reasons." "To obtain an excuse for applying for a job." "I had to have something to do." "Because I thought I should like it."

This question can only be regarded as a preliminary survey of the field. From the answers given, the motives fall conveniently into the following fundamental motives:

| <i>Alleged Motives.</i> | <i>Suggested Corresponding Instinctive Dispositions.</i> |
|--|---|
| (1) Economic. | Self-preservation, acquisition. |
| (2) Social service, self-aggrandisement. | Race preservation, herd and parental instinct, self-assertion, pugnacity. |
| (3) Academic. | Acquisition, approbation, continuance of school habit. |
| (4) Desire for knowledge. | Curiosity. |
| (5) Self-development or sociability. | Growth, expansion, self-assertion, herd instinct. |
| (6) Parental authority. | Self-abasement. |
| (7) Weak or no motive. | General deficiency. |

A further development of this enquiry would be to arrange the chief instincts in their form as motives for entering college, and ask the student to divide 100 between them.

This could be carried out on entering college, as part of the "General Intelligence" Test. From the point of view of helping the student it is obvious that the more instincts can be arranged as conscious positive motives for college success the more chance there is of his or her full quota of energy being used. A clear understanding of the aim of the student's time spent in college is more likely to lead to a conscious application of the means whereby that aim can be efficiently realized.

We may note in passing a difference in phrasing possibly indicating a difference of temperamental disposition: viz., "To get a degree" is active. "To receive instruction" is passive.

The quantitative results are as follows :

| | <i>Earn.</i> | <i>Voca- tion.</i> | <i>Degree.</i> | <i>Learn.</i> | <i>General Educa- tion.</i> | <i>Sent.</i> | <i>None or Weak.</i> | <i>Total.</i> |
|----------------|--------------|------------------------|----------------|---------------|-------------------------------------|--------------|------------------------------|---------------|
| <i>dF</i> | 3.5 | 3 | 14.5 | 7 | 12 | 6 | 5 | = 53 |
| <i>dD</i> | 3 | 7 | 10.5 | 6 | 3.5 | — | — | = 30 |
| <i>dF</i> , % | 7 | 10 | 27 | 13 | 22 | 11 | 10 | = 100 |
| <i>dD</i> , % | 10 | 23.4 | 35 | 20 | 11.6 | — | — | = 100 |

INTERPRETATION.

Earning.—There is no great difference between *dF* and *dD*.

Vocation, Degree, Learning.—Nearly 80 per cent of *dD* as compared with 57 per cent of *dF* come in these categories : therefore concentration upon obtaining a degree, i.e., a definite specialized “academic” aim, is indicated as the most general motivating factor for success in the student’s official career.

General Education, No Personal Choice, Unsatisfactory Motives.—*dF* predominates here, 43 per cent as against 11.6 per cent of *dD*, and this indicates that diffuse general motives, lack of own personal motives, or unsatisfactory motives are a predisposing cause of academic failure.

SUMMARY.

Academic success correlates rather with definite specialized aims than with broad general interests.

It might be argued that a “General Intelligence” Test tends to give more weight to general interests than to special abilities required for success in university examinations : and this would be one reason for expecting some discrepancies between the two sets of marks.

2.—What subjects are you studying and why did you choose them?

(1) The qualitative classifications can be arranged in the form of different reasons for choosing subjects :

(a) As ends in themselves. *Subjective attitude.*

Interest and Pleasure—e.g., “Maths. It is the subject that most appeals to me.” “English, favourite subject. French congenial.” “I chose the Arts subjects because I had always enjoyed them at school.” “Librarianship I chose because I am fond of books.” “French, English, German, Latin—because I like language and literature.”

Ability—e.g., “Eng. Hon. with History subsid. Because I liked them and had done better in them than in other subjects before coming to College.”

- (b) As a means to some other end. The *objective* attitude. *Subsidiary to another subject*—e.g., "Eng., French, Lat., Hist., seemed to afford best broad groundwork as preparation for Honours." "Maths. not chosen, but taken to assist Chemistry and Physics."

General—e.g., "History. It throws light on most present day problems." "Medicine—in order to be able to travel afterwards." "Interested in philosophy as a possible means of solving difficulties." "Psychology as an aid to education of children." "Medicine, because of its usefulness in helping humanity." "Librarianship, to serve secular needs of people."

- (c) No personal choice.

Compulsory (academic compulsion)—e.g., "Latin necessary for Inter. Arts Secn. 10."

Economic—e.g., "Eng., Lat., French, History. I chose them because I could not afford to do Science as I should have liked, and the Provost recommended them as a good combination."

Recommendation—e.g., "I was advised from school."

- (d) Habit.

Father's Profession (family habit)—e.g., "Architecture—father's profession."

Social Habit—e.g., "Zoology, because it is the usual thing to do."

Personal Habit—e.g., "Did Arts because I never did anything else." "French, Latin, English, because I have done them before."

2.—The quantitative results of the above classification are as follows :

Subjective—as ends in themselves : dF , 38 (61 per cent) ; dD , 17 (65 per cent).

Objective—as means to some other end : dF , 8 (13 per cent) ; dD , 5 (19 per cent).

Compulsory—not personal choice : dF , 13 (21 per cent) ; dD , 1 (4 per cent).

Father's Profession : dF , nil ; dD , 3 (12 per cent).

Custom : dF , 1 (1.6 per cent) ; dD , nil.

Habit : dF , 2 (3.2 per cent) ; dD , nil.

INTERPRETATION.

These figures indicate a higher percentage of "compulsory choices" among *dF* than among *dD*, but the numbers of *dD* are small. The total number of answers were *dF* 62, and *dD* 26.

The following percentages of students have not answered this question: *dF*, 15 per cent; *dD*, 17 per cent.

For future investigations Questions 1 and 2 might be given twice: the first time asking the simple direct questions as above to be answered in the student's own words. In this way a further unbiased qualitative analysis continues to be possible, by leaving open the opportunity to describe motives that have not yet appeared for classification.

The second time the questions might be framed containing all the known motives properly classified and with directions to divide 100 between them, according to their weight in the student's mind.

In this way more accurate quantitative results are possible. The whole procedure is, of course, open to the objection that strengths of interests are liable to temporary variations, and liability to such variations must show considerable individual differences.

3.—What has been the state of your health—bad, moderate, or good?

| | <i>Bad.</i> | <i>Moderate.</i> | <i>Good.</i> |
|--------------------------|-------------|------------------|--------------|
| 53 cases <i>dF</i> | 4% | 34% | 62% |
| 30 cases <i>dD</i> | — | 30% | 70% |

The discrepant Failures are slightly less healthy than the discrepant Distinguished.

4.—How do you divide your time between:

- (a) college work; (b) college sports, societies, and recreation;
- (c) outside work; (d) outside sports, societies, and recreation.

Divide 100 between (a), (b), (c), and (d).

The averages of 53 cases of *dF* were: (a) 54, (b) 19, (c) 9, (d) 18.

By simple addition the following can be deduced:

Time in college, 73; time outside, 27; time at work, 63; time at recreation, 37.

The averages of 28 cases of *dD* were: (a) 60, (b) 11, (c) 10, (d) 19.

Again the following can be deduced:

Time in college, 71; time outside, 29; time at work, 70; time at recreation, 30.

The discrepant Distinguished spend longer on college work and a little longer on outside activities, and less time on college sports and recreation. On the last point the lowest and highest figures are particularly interesting: 16 *dF* cases have over the highest *dD* score for (b), indicating much more time spent on college sports.

| | (a) | (b) | (c) | (d) |
|----------------------------------|--------|------|------|------|
| <i>dF</i> , lowest—highest | 15—90 | 0—80 | 0—50 | 0—45 |
| <i>dD</i> , lowest—highest..... | 20—100 | 0—25 | 0—40 | 0—48 |

The following information in hours per week can be deduced from the percentages in Questionnaire 2, Question 4, and the hours of work per week in Questionnaire 1, Question 4.

| | College. | | Outside. | | Total. |
|-------------------------|----------|-------------|----------|-------------|--------|
| | Work. | Recreation. | Work. | Recreation. | |
| Given <i>dF</i> % | 54 | 19 | 9 | 18 | 100 |
| Given av. hrs. per wk. | 38 | — | — | — | — |
| Deduced av. hrs. p. w. | — | 13 | 6 | 13 | 70* |
| Given <i>dD</i> % | 60 | 11 | 10 | 19 | 100 |
| Given av. hrs. per wk. | 46 | — | — | — | — |
| Deduced av. hrs. p. w. | — | 9 | 8 | 16 | 79* |

The following table of hours per week can also be deduced :

| | | | | |
|-----------------|---------------|--------|------------------|-------|
| <i>dF</i> | Total College | .. 51 | Total Outside | .. 19 |
| <i>dD</i> | Total College | .. 55 | Total Outside | .. 24 |
| <i>dF</i> | Total Work | .. 44 | Total Recreation | .. 26 |
| <i>dD</i> | Total Work | .. 54† | Total Recreation | .. 25 |

From these figures it may be inferred that the main interests which compete against academic success are the recreations organized within the college. *The discrepant Failures (70) also appear to “lose” nine hours a week as compared with the discrepant Distinguished (79); †the discrepant Distinguished (54) on the other hand, average a nine-hour day with a six-day week. It must be remembered that these figures are based on subjective estimates, not on accurate objective measurements.

5.—(a) What college work interests you most?

(b) What college work interests you least?

The numbers are too few to deal quantitatively with the individual subjects mentioned.

The following are the total numbers of students answering the questions :

53 cases *dF*, (a) 51 (96 per cent) ; (b) 48 (91 per cent).

30 cases *dD*, (a) 27 (90 per cent) ; (b) 17 (57 per cent).

Of the 17 *dD* who do not mention a dislike in terms of college work in answering (b), five give answers as follows: "None" "None," "I like them all," "I don't study any subject now that I dislike," "All equally interesting," and two more reply "Sports." This clearly indicates that *dD* tend to be more interested in the whole of their work than are *dF*.

An enquiry into the reasons for interest and lack of interest might well be added in future investigations.

6.—(a) What do you consider your strongest abilities?

(b) What do you consider your weakest abilities?

This question lacks precision. The answers fall under such a variety of non-comparable categories that quantitative treatment would only be misleading. The following give some indication of the range of answers :

"Memory," "concentration," "work," "thoroughness," "consistence," "reasoning power," "organization," "teaching," "writing," "sports," "chess," and a variety of college subjects.

One point, however, is probably significant : the figures for answers in terms of college subjects.

| | <i>Total Answers.</i> | <i>College Subjects.</i> | <i>Per cent of college subjects to total answers.</i> |
|-----------------|-----------------------|--------------------------|---|
| <i>dF</i> | 77 | 25 | 32.5 |
| <i>dD</i> | 28 | 13 | 46.4 |

The abilities of the discrepant Distinguished tend to be given in terms of college subjects, whereas the abilities of the discrepant Failures tend to be given in terms of non-academic subjects.

7.—(a) At which college work do you think you have been most successful?

(b) At which college work do you think you have been least successful?

There was a tendency to put down the subjects in which the students actually had been successful, judging from their questions to the effect "Does it mean what I did best in?"

An attempt was made to compare success (Question 7) with interest (Question 5) but because some did not answer Question 5 and others did not answer Question 7 the results proved inadequate.

8.—(a) What helps you most to be successful in college?

(b) What helps you least to be successful in college?

The qualitative and quantitative results are as follows:

| | | | | | | Total weight of factors. | | | |
|--|-----|-----|--|-----|-----|--------------------------|-----|-----|-----|
| | | | | | | | | % | % |
| (a.) | dF. | dD. | (b.) | dF. | dD. | dF. | dD. | dF. | dD. |
| Interest | 9 | 8 | Lack of Interest (Dislike, etc.) | 4 | 1 | 13 | 9 | 14 | 20 |
| Lecturers (e.g., good, encouraging, inspiring.) | 6 | 4 | Lecturers (e.g., bad, indifferent, dull.) | 4 | 3 | 10 | 7 | 11 | 15 |
| Company (e.g., discussion, competition, good example.) | 7 | 1 | Company (e.g., bad example.) | 7 | 1 | 15 | 2 | 16 | 4 |
| Distractions (e.g., as stimulus, athletics, pleasure, bad weather.) | 4 | 1 | Distractions (e.g., sports, dances, etc., fine weather.) | 15 | 1 | 19 | 2 | 21 | 4 |
| Concentration (e.g., privacy, rest, and quiet.) | 4 | 2 | Lack of Concentration .. (and noise.) | 5 | 1 | 9 | 3 | 10 | 6 |
| GENERAL FACTOR OF COMPETING INTERESTS | | | | | | 43 | 7 | 47 | 14 |
| Spare-time leisure | 2 | 1 | Lack of time | — | 1 | 2 | 2 | 2 | 4 |
| Success | 2 | — | — | — | — | 2 | 2 | 2 | — |
| Physical health | 1 | 1 | Ill-health | 1 | 1 | 2 | 2 | 2 | 4 |
| Mental health | 1 | — | — | — | — | 1 | — | 1 | — |
| Personal Qualities (e.g., work, method, organization, stupidity, cheerfulness, determination, perseverance, vanity, and ambition.) | 7 | 7 | Personal Qualities (e.g., laziness, overwork, intelligence, depression, lack of determination, lack of self-confidence, diffidence, lack of memory, and slowness.) | 11 | 12 | 18 | 19 | 21 | 43 |
| TOTAL | 44 | 25 | | 48 | 21 | 92 | 46 | 100 | 100 |

If the answers to (a) of dF and dD be 100, then the answers to (b) of dF is 109 and of dD 84, i.e., dF tend to answer that which hinders them and dD that which helps them.

The tendency not to reply to Question 8 is indicated by the ratio of the answers to the students. Where 200 is the standard reply of two answers—i.e., one under (a) and one under (b), for each student :

$$dF = 174 \text{ answers} = \frac{92}{53} \text{ or } 87 \text{ per cent.}$$

$$dD = 153 \text{ answers} = \frac{46}{30} \text{ or } 76.5 \text{ per cent.}$$

If these figures were significant they would indicate that dD are less conscious of the factors that make for success or failure in college than dF , because presumably dD are better adapted, the problem has been successfully solved and does not arise.

The important differences in the result are those of distractions and company : dD appear to be decidedly less moved by interests other than academic.

The slight mention of the effect of company bears out the conclusions of Dr. Freyd and of Ruth M. Hubbard, summarized by W. V. Bingham in *BRITISH JOURNAL OF PSYCHOLOGY*, Vol. XVI, Part 4, that students of mechanics are introverted and shrink from their social environment. But introversion tends to develop ability in ideas and symbols besides ability in mechanics, and we may hazard the opinion that introversion is more conducive to academic success than extroversion. Possibly extroverts in college tend to develop in the way of the social life and of sports rather than along the path of lonely study. A correlation of temperamental differences such as introversion and extroversion with academic success and failure in the different Faculties would seem to be worth while.

In the words of Goethe, we may be reminded that :

“ Es bildet ein Talent sich in der Stille,
Doch ein Character in dem Strom der Welt.”

9.—(a) What vocation would you like to adopt ?

(b) What is to be your vocation in life ?

Comparing (a) and (b) the answers fall into three groups.

(1) The same.

(2) Compatible with one another or uncertain—i.e., the work the student is now doing would be of use in the desired vocation, e.g. :

(a) Missionary ; don't know ; research chemist ;

(b) Teaching ; medicine ; don't know.

- (3) Irrelevant and sometimes incompatible with one another ;
 e.g. :
 (a) Medicine ; riding mistress ; drilling mistress ;
 (b) Teaching ; medicine ; librarianship.

The quantitative results are as follows :

| | (1) <i>The Same.</i> | | (2) <i>Compatible or Uncertain.</i> | | (3) <i>Irrelevant or Incompatible.</i> | |
|------------------------------|----------------------|-----|-------------------------------------|-----|--|-----|
| 53 cases <i>dF</i> | 24 | 45% | 17 | 32% | 12 | 23% |
| 30 cases <i>dD</i> | 17 | 56% | 10 | 33% | 3 | 11% |
| TOTAL | 41 | 49% | 27 | 33% | 15 | 18% |

A quarter of the discrepant Failures are definitely sidetracked or missing their vocation.

Of 83 students who answered this question only one-half of them had definitely settled their vocation.

These figures indicate the need for vocational guidance ; or at least a further and more widespread enquiry embracing "normal" students.

10.—What was your attitude during the Intelligence Tests ?

The following list is compiled by giving an attitude, or a reason for failure, one mark each time it is mentioned :

Good in Test, dF : Interest (7 times), amusement (6), anxiety (3), speed (2), contempt (1), curiosity (1), enjoyment (1), alert (1), tiring (1), annoyance (1), resignation (1) ; total, 25.

Bad in Test, dD : Amusement (10), speed (9), anxiety (6), interest (5), critical (2), "nuisance" (1), serious (1), concentration (1), strangeness in test (1), strangeness in college (1), bad health and fatigue (1), foreigner but "composed" (1), below average age (1) ; total, 40.

The chief difference lies in the mention of speed by those who do badly in the Test.

While "interest" is mentioned by those who do well and less by those who do badly in the Test, anxiety symptoms are largely mentioned by those who do badly but are not mentioned by those who do well. This difference becomes more significant if we adopt a suggestion made by Professor J. C. Flugel that amusement here may be a defence-reaction to anxiety.

The paucity of numbers prohibits any definite quantitative treatment, but the answers suggest that at the end of the "General Intelligence" Test might be added some such questions as follows :

- (1) What has been your attitude during this Test ?
 - (a) At the beginning.
 - (b) During the middle.
 - (c) Near the end.
- (2) (a) What has helped you to do well in the Test ?
 - (b) What has hindered you from doing well in the Test ?

11.—What definite effects have the differences between the methods of instruction at school and those at college made in your ability to learn ?

The following are representative answers :

COLLEGE METHODS BETTER.

dF.—"At first it hindered me, but now I am able to learn more quickly." "Lectures impel me to pursue subject further, which lessons did not. Can learn better because more interested." "I learn more easily at college than at school, because there is no one to force me to learn things that do not interest me, also because I have a feeling that I am working from choice and that there is no punishment if I do not choose to work."

dD.—"College lectures more beneficial to learning than school lessons. I work better when arranging my own time table than by working by a set one as at school."

NO DIFFERENCE IN VALUE MENTIONED.

dF.—"No definite effects whatever." "What I learnt at school enabled me to learn here."

SCHOOL METHODS BETTER.

dF.—"College makes me lazier because left to work on my own." "It has given me more interests but less power to concentrate."

dD.—"I learnt more at school. I am not a born worker." "Can learn better from what I am told than from what I read, hence instruction at college has lessened my ability to learn."

The following are the quantitative results :

| | College Better. | No Difference. | School Better. |
|---------------------------|-----------------|----------------|----------------|
| 27 cases <i>dF.</i> . . . | 13 | 9 | 5 |
| 25 cases <i>dD.</i> . . . | 11 | 8 | 6 |
| | 24 | 17 | 11 |

On the whole college methods are preferred. The numbers are far too small to reveal any reliable differences between the "discrepant Distinguished" and the "discrepant Failures," but they suggest that school methods are relatively more preferred by the "discrepant Distinguished" than by the "discrepant Failures."

The above completes the answers to the questionnaire.

VI.

The following is an attempt to classify the chief reasons why students who did well in the Test (a), (b), and (c) were subsequently referred. They represent the opinions of the investigator based upon the results of the questionnaires and interviews. The classification is necessarily tentative and unsystematic. A larger number of cases interrogated in greater detail would give much more valuable results.

1.—*New subject or lack of practice.* The standard attained by the student is not up to the usual college standard. This sometimes tends to the complaint of overwork—e.g., "Handicapped by beginning Latin late." "New subjects and overwork." "Stopped studying a year between school and college." "Had left French off for two years."

The following case, though not referred, is of interest.

The student obtained A in the Test but only thirds in the examination. "Wished to take Chemistry, but persuaded to take Physics. After two years individual tuition at school, found it very difficult on first coming up to adjust myself to the college system."

Students such as the above are those likely to pull up later on and do well in subsequent examinations.

2.—*Faulty Teaching*—e.g., "English is very badly taught here." "I have always been bad at French. I've had too many different teachers. I have to get used to them; another comes and I have to begin all over again." "I have been taught French by a lot of different teachers: always rather a muddle." "A bad teacher. Several others were also referred." "All the new Maths. came in the last term with no time for revision." "An English lecture clashed with a Maths. lecture." "I have no good groundwork in either Latin or History."

These answers remind us of the remarkable fact that, although in other branches of the teaching profession some guarantee of teaching ability is required, this is not the case with University Professors, who are selected upon their supposed knowledge of the subject.

3.—*Outside Interests :*

(A) Permanent (vocational) Interests, e.g. :

Wishes to be a missionary rather than to teach in school. Prefers business to medicine. Prefers literary and secretarial work to teaching. Wishes to be a novelist ; quite indifferent to examinations. Would prefer to be a riding master than to study medicine. Prefers business to college, and has left college to go into business. Would prefer to be a drilling mistress to being a librarian. Follows own interests, religion and sport, rather than "ordinary work." Sole interest is wireless transmission : inadequate interest in mathematics and college work. "I have been told the diploma is no good to women. There is a job waiting for me."

These answers indicate the lack of vocational guidance and the need for the establishment of proper facilities for all students, in co-operation with the Appointments Board, as an integral part of University routine.

(B) Temporary Interests :

(a) Pleasant : under own control, e.g. :

Varied interests, outside distractions, general spread of outside interests and disinclination to work.

(b) Unpleasant : outside the student's own control, e.g. :
Conditions at home are unfavourable. Lack of sympathy outside college. Moving house. Worry over father's illness.4.—*Negative Interests.*

Definite dislike of a particular subject, e.g. :

Dislikes English, therefore only worked just to get through, and failed by about three marks. Always bad at English essays : always avoids essay questions. Dislikes Maths. because a mutual dislike of former maths. mistress. Dislikes French and wishes to change to Ancient History, but not allowed to by the regulations.

This category raises the questions connected with the causes of dislike. Such causes may be classified as follows :

- (a) Dislike of the person of the teacher. This may be a reflection of the dislike of the teacher for the pupil. It is also caused by inferior pedagogical methods such as unduly heavy punishment, sarcasm, etc., inducing fear. In other cases it is caused indirectly through association to other persons in authority who are feared.

- (b) Dislike of a subject through its associations to topics in respect of which the fear of punishment is operative ; these may be generally referred to as tabooed topics. For example, Botany, Biology and Physiology may be disliked because they are associated with sex or excretion or the body. For, according to certain religious teachings, spiritual things only are fit subjects for thought, and it is "unspiritual" to attend to physiological functioning.
- (c) Thirdly, dislike may arise from lack of ability in the subject. This may be due to some special defect, or be indirectly consequent upon lack of interest, ultimately motivated perhaps by considerations properly classified under the first two headings. For example, Languages may be disliked as a consequence of the reiterated prohibition "Little children should be seen and not heard" leading to specific verbal disability : or an insular patriotism may foster dislike of and disability in all foreign languages.

5.—*General Lack of Interest*, e.g. : No economic compulsion. General lack of interest. "I am interested in work for about a quarter of the term." Bad at drawing, writing and spelling (these are not marked in the Test) : slack, because no determined interest in medicine ; has other interests, business, etc. General lack of interest, self-determination and independence : "coming to college arranged for me."

These answers indicate the need for investigating interest with a view to the choice of a subject that will really appeal to a student.

6.—*Own interests and method of work inhibit learning from set college work*, e.g. : "Poor method of working and bad application." "I prefer to follow my own methods of work and to go at my own rate : I don't stretch myself during exams. : weak verbal memory and strong visual memory."

The existence of this category points to the need for the establishment of facilities for psychological training in efficient methods of work. Some students may need some form of analysis or sympathetic talks with a view to diminishing psychological resistance to adopting new methods of work.

7.—(a) *Mental Disability*, e.g. : Prefers emotional "imagination" and "inspiration" to intellectual "concentration." "Bad memory" : poor method of work, no sustained plan. "Lack of concentration

and will power." "Always bad at English essays. Always avoids essay questions. Writing bad and slow. misses out words. Always been shy. Mind wanders at Biology questions."

(b) *Mental Illness*, e.g.: Bad memory and concentration; had a nervous breakdown. Nervous: feels nervousness impedes academic progress.

Their good performance in the Test shows that the disabilities of these students are not due to lack of general ability but to some functional impediments that would probably require psycho-therapeutic treatment.

8.—*Physical Illness*. e.g.: Illness just before examination.

9.—*Accidental*, e.g.: Student was referred in chemistry practical. There were three questions in the examination: he had missed the particular day in which one of these questions was done in class. Has since done well, B.Sc. Honours 2nd Class.

The relative weights of the different factors are as follows:

| | <i>Number of Cases.</i> | <i>Approx. per cent.</i> |
|--|-----------------------------|------------------------------|
| (1) New subjects: lack of practice in a special ability.. | 15 | 20 |
| (2) Faulty teaching | 7 | 10 |
| (3) Outside interests: | | |
| A.—Permanent (vocational) interests..... | 11 | 15 |
| B.—Temporary interests: | | |
| (a) Pleasant: under own control | 6 | 8 |
| (b) Unpleasant: outside own control | 4 | 6 |
| (4) Negative interests | 9 | 12 |
| (5) General lack of interest | 3 | 4 |
| (6) Own interests and method of work inhibit learning from set college work | 3 | 4 |
| (7) (a) Mental disability..... | 7 | 10 |
| (b) Mental illness (anxiety, etc.) | 5 | 7 |
| (8) Physical illness | 2 | 3 |
| (9) Accidental | 1 | 1 |
| | 73 | 100 |

The incidence of the causes for academic failure by those who do well in the Test 1, 2, and 3a, totalling 45 per cent of the whole, could probably be greatly reduced if the University authorities were to adopt the appropriate measures already indicated. A further reduction could be made in regard to the categories 4, 5, 6, and 7, i.e., 37 per cent of the whole by suitable psycho-therapeutic treatment.

VII.

SUMMARY OF RESULTS AND RECOMMENDATIONS.

1.—(Part I). The results over five years of this "General Intelligence" Test show that Arts are the best Faculty (225), closely followed by Science (214); and these are the only two Faculties whose average is above the total average (204). Then follows in order Medical Science (197), Librarianship (190), Engineering (186), Journalism (180), Architecture (165), Fine Arts (154).

2. (Part II).—One use of the Test is to forward the names of those who do well to their respective Faculties that they might receive particular encouragement.

3. (Part II).—The three-fold criteria of "Academic Distinction" has given about 20 per cent of the students from the top of the examination records. This corresponds with about 20 per cent referred, etc., at the bottom of the examination records. The continued use of these three criteria, viz., (a) prize-winners, (b) three firsts, (c) one first and no thirds, in further enquiries would seem therefore to be justified.

4. (Part II).—The correlation of the Test with examinations should be made for each Faculty separately.

Ideally the following correlations should be made :

- (1) With Matriculation results and the different ways of matriculating.
- (2) With Intermediate results.
- (3) With the Degree and Diploma results.
- (4) With After-career.

Part (II).—The rough correlation of the Test with those who fail and with those who are distinguished in their next examination is as follows :

| <i>Class in Test</i> | <i>A.</i> | <i>B.</i> | <i>C.</i> | <i>D.</i> | <i>E.</i> | <i>F. G. H. I.</i> | <i>Total.</i> |
|------------------------------|-----------|-----------|-----------|-----------|-----------|--------------------|---------------|
| % Fail | 10 | 10 | 20 | 22.5 | 40 | 51 | 16—26 |
| % Distinguished . . | 39 | 26 | 17 | 15 | 12 | 4 | 18 |

5. (Part II).—Of those who compose the Tail of the Test from one-half to two-thirds are unsatisfactory in their examinations. Of all students who take the Test (including the Tail) about one-quarter are unsatisfactory; excluding the Tail about one-fifth are unsatisfactory. This is a large percentage of inefficiency.

6. (Part III).—There are more students failed who have done well in the Test (13 per cent) than those who do badly in the Test and subsequently do well at examinations (10 per cent); but in Engineering and Architecture the proportion is reversed. This suggests that ability in Engineering is special rather than general (or possibly that the Engineering examination standard is lower than in other Faculties).

7. (Parts IV and V).—In general, the discrepant Distinguished are more interested in their work, work longer hours (1·4), and with a better method. They are not distracted by social interests but concentrate upon the narrow academic aim (2·8). The better methods are: more reflection and writing analyses, abstracts, and cross-references (1·2), fuller notes (1·8), quicker revision of notes (1·5), but (1·9, *b*) “pushing on as best you can to the end of the book, and then mastering the smaller sections in the light of the whole” shows the discrepant Failed with a supposed better method.

The discrepant Failures have wider interests (2·1) and abilities (2·6), and often no personal choice in their college work (2·2). They are less healthy (2·3). They tend to spend more time on college recreation (2·4*b*). They are distracted by other interests (2·8), and have often not satisfactorily settled their vocation (2·9).

8. (Part V).—Further research might determine what factors hinder the academically distinguished from doing well in the Test (2·10).

9. (Part VI).—The discrepant Failures appear to be handicapped in their college work mainly by lack of practice in subjects relatively new to them, by faulty teaching at school or college, by the counter-attractions of other vocational interests, by the distractions of pleasant and unpleasant non-academic interests, and by mental disability. In connection with the last point, those students found to be handicapped by mental disability, anxiety symptoms, or mental illness might be specially investigated and receive special help from the Psychological Department.

10. (Part VI).—A large part of the work of the college, and of universities generally, comes well within the scope of modern psychological methods of vocational selection and vocational guidance. An application of the same methods which are being so successfully applied to job-analysis by industrial psychologists might be extended to vocation—and profession-analysis. Scientific vocational guidance should be at least at the disposal of, if not obligatory upon, all students entering the college. Some such methods we would expect to diminish the number of unsatisfactory students, to increase the number of the distinguished, and ultimately to raise the general average standard of academic ability.

RÉSUMÉ.

L'APPLICATION DE TESTS À DES ÉTUDIANTS D'UNIVERSITÉ. (II).

Les résultats d'un questionnaire démontrent que ces étudiants qui réussissent mal des tests d'intelligence générale à "University College," Londres, mais qui réussissent bien un examen d'université subséquent, s'intéressent plus à leur travail, et travaillent plus d'heures par jour selon des méthodes plus intelligentes. Ils ne se laissent pas distraire par des préoccupations sociales mais se dirigent vers le but étroit académique. D'autre part ceux qui réussissent bien le test et mal l'examen ont des intérêts et des capacités plus larges, ils n'ont souvent pas la liberté de choisir personnellement leurs cours universitaires. Ils sont moins sains. Ils tendent à passer plus de temps aux distractions qu'offre la vie universitaire. Ils se laissent distraire par d'autres intérêts et très souvent ils ne semblent pas avoir trouvé leur véritable vocation. Ils sont pénalisés par le manque de pratique dans des branches relativement inconnues, ou par un enseignement erroné, ou par quelque incapacité intellectuelle. On recommande que ces derniers subissent un examen spécial de la Section Psychologique de l'université. Pour diminuer le chiffre des étudiants faibles (20 per cent.) on devrait mettre à la disposition de chaque étudiant, qui entre à l'université, les méthodes scientifiques de sélection et d'orientation professionnelles, on devrait peut-être même les y soumettre obligatoirement.

ÜBERSICHT.EINE ANWENDUNG DER INTELLIGENZPRÜFUNG AUF STUDENTEN.
II. TEIL.

Die Ergebnisse eines Fragebogens zeigen, dass diejenigen Studenten, die bei der Allgemeinen Intelligenzprüfung im University College, London, schlecht, bei einem späteren Universitätsexamen jedoch gut abschneiden, mehr Interesse an ihrer Arbeit haben und mehr Stunden pro Tag und mit besseren Methoden studieren als andere. Sie werden nicht durch gesellschaftliche Interessen abgelenkt, sondern konzentrieren sich auf das beschränkte akademische Ziel. Andererseits haben jene, die in der Intelligenzprüfung gut, in einem folgenden Examen aber schlecht abschneiden, umfassendere Interessen und Fähigkeiten und gestalten häufig ihre Universitätsarbeit nicht nach ihren persönlichen Bedürfnissen. Sie sind weniger gesund. Sie neigen dazu, einen grösseren Teil der Universitätszeit Unterhaltungen zu widmen; sie werden durch andere Interessen abgelenkt und haben häufig ihren Beruf nur unzulänglich vorausbestimmt. Sie sind benachteiligt, weil ihnen die Übung in Fächern, die ihnen verhältnismässig neu sind, fehlt oder weil sie in der Schule mangelhaft unterrichtet wurden oder weil sie geistig unfähig sind. Es wird empfohlen, dass diese letzteren speziell untersucht und von der Psychologischen Abteilung beraten werden. Um die Zahl der ungenügenden Studenten (20 Prozent) zu verringern, sollten die wissenschaftlichen Methoden der Berufswahl und der Berufsberatung allen neu Eintretenden Studenten zur Verfügung stehen und vielleicht sogar für sie obligatorisch sein.

SOME NOTES ON THE INCIDENCE OF NEUROTIC DIFFICULTIES IN YOUNG CHILDREN.

By SUSAN ISAACS.

- I.—(A) *The practical and theoretical importance of the question of incidence.*
 - (B) *Definition and recognition of neurotic difficulty.*
- II.—(A) *General impressions as to the incidence of such difficulties.*
 - (B) *Some detailed evidence from middle-class children in good homes.*
- III.—*The question of environmental influences.*
- IV.—*Summary of conclusions.*

*PART I.

I.—INTRODUCTION.

(A).—The question of the relative frequency of neurotic difficulties in young children has both theoretical and practical importance.

(a) On the *theoretical* side, it has an intimate bearing upon the whole problem of the relation between the "normal" and the "abnormal" and of the content which should be given to the idea of *normality* in children. The persistent confusion between the statistical and qualitative meanings of "normal" is nowhere more powerful in its effect upon theory than here. It is often implicitly assumed that neurotic difficulties must be rare, and that *average* children in the statistical sense are necessarily *normal* in the qualitative sense of being not difficult, or entirely free from neurosis. And this fixed idea that neurotic difficulties are rare enables us to dismiss the view that the psychological insight arrived at by the study of neurosis has any sort of bearing upon "ordinary" children. The view that the difference between the ill and the well is quantitative, a question of the final balance of factors, rather than of essential differences in the nature of those factors, is now more or less widely accepted with regard to adults, even amongst academic psychologists. But with reference to *children*, many people still feel very concerned to divide the sheep unmistakably from the goats. If, now, it should appear (a) that actual observable difficulties of a kind that can only be

* Part II, consisting of further illustrative material, will follow in the next issue.

genetically understood on an adequate theory of neurosis are in fact common among young children ; (b) that the shades and degrees of neurotic difficulty grade continuously into each other, from the mildest form undeserving of any adjective but "normal" to the severest neurosis or psychosis ; and (c) that almost *all* children show at least one or two occasional and transitory neurotic symptoms lasting for shorter or longer periods, during the years from the second to the sixth ; then the theoretical relation between the neurotic and the normal would take on a very different aspect. The evidence I have to offer in this paper seems to suggest that these are the probabilities. It confirms in this respect the views held by those psycho-analysts who have made full analyses of children considered "normal" as well as of those labelled neurotic.

(b) On the *practical* side, it is obviously very important from the point of view of adequate diagnosis in any particular case to know something of the relative frequency in young children of difficulties arising from psychological sources. Moreover, many of the problems relating to treatment are bound up with that of the actual incidence of neurotic difficulties.

(B).—What is meant by a neurotic difficulty ?

Before I can say anything intelligible as to the incidence of neurotic difficulties in early childhood, it is necessary for me to say what I mean by the phrase. And any definition involves the whole theory of neurosis. The main intention of this paper is, however, to offer as full a selection as possible from the actual descriptive material of neurotic troubles in little children which I have recently gathered. I do not, therefore, propose to go into the theory in any detail. And I shall have to take for granted the case for holding that the Freudian theory is the only theory of neurosis which offers full theoretical illumination or practical help of a radical kind.

I shall confine myself here (a) to offering the briefest theoretical statement, so that readers may know what I mean by "neurotic" ; and (b) to stating some of the grounds for applying that term to types of difficult behaviour in young children which are not so regarded by every psychologist.

(a) Freud has shown us that a neurotic symptom is the outcome of mental conflict, and a more or less unstable solution of such conflict. More precisely, it is a mode of dealing with the anxiety aroused in the ego (that part of the psyche which is differentiated to deal with reality) by the internal pressure from instinct-impulses, whose discharge in the

external world would be felt by the ego to involve too great a danger to the whole self. In the adult, these instinct-impulses always turn out to be infantile in nature, and I can thus legitimately discuss the problem from the point of view of the young child simply.

The ego of the very young child is immature and weak, but his primary wishes and feelings are strong and imperious. They cannot always be immediately or fully satisfied as their nature demands. And unsatisfied wishes arouse further impulses of rage and fear, as anyone can see when watching the infant in such situations. But these rages and fears in their turn cannot find an adequate discharge in the real world. The infant or young child cannot effect those changes in the external world which might bring about satisfaction of his desires. He is almost or quite helpless before them. The task of the ego in controlling wishes and fears and rages is thus overwhelmingly great. When the pressure from these heaps up in the child's mind, it is felt by him as an actual *danger* to the ego, and reacted to *as if* it were a danger in the external world. It *is* in one real sense external to the ego itself, since it issues from the undifferentiated primary reservoir of instinct-impulses. The anxiety so frequently shown by tiny children is an experience of the ego, signifying this heaping up of the unbearable tension of unsatisfied wishes and of the aggression which unsatisfied wishes provoke, and stirring the ego *to do something about it*.

This internal situation is dealt with in a variety of ways at different times, in different children, and according to the specific nature of the wishes involved, with their corresponding phantasies. In the *phobias*, for example, the child shows a distressing fear of some animal or other external object, often without any or a sufficient "real" cause. These neurotic fears form a large class of the cases which I shall quote later on. In them the anxiety aroused in the child by his own aggressive wishes is allayed by his projecting these wishes on to the external object and so being afraid of *it*. The fear of this object is bad enough, but it is not so overwhelming as the internal anxiety and guilt it replaces. The dreaded animal or person can be avoided or kept out; appeal can be made against it to the loving real parents. And above all, *it* is the guilty one, not the child himself, and so he can hope to be loved and protected by the real parents. Little children very readily develop such phobias, which are sometimes quite slight and evanescent, disappearing with the gradual strengthening of the ego; but in other cases, very intense and enduring, and not to be relieved except by radical treatment.

Even in so brief a statement of the complicated mental processes which go to the building up of neurotic symptoms, something should be

said further about the element of guilt in them. The dreaded animal (or woman visitor, in the case of one of the children to be quoted), is an *avenging* presence as well as the "bad self" of the child. It stands not only for the original aggressive wishes, but also for the punishing self, the super-ego (forerunner of the adult conscience) which is early differentiated off in the child's mind on the pattern of the controlling parents, to do their work when they are absent. This element is even more important in other neurotic formations than in the phobias.

The neurotic difficulty is thus one which arises mainly from the child's attempt to deal with an *internal* danger, the danger which the ego feels itself to be under from the pressure of libidinal and aggressive wishes, which somehow have to be mastered if the child is to adapt himself to the external world. Factors of real experience do, of course, enter in to a lesser or greater extent as *stimuli* to the internal situation; and, moreover, the final outcome in the child's later life is always a function of the interplay between his real experiences and his phantasies.

The term *neurotic* is thus essentially a *genetic* term, referring solely to the psychological origin and developmental history of the behaviour to which it may be applied.

(b) Few people would deny the term "neurotic" to the phobias and night-terrors, to nail-biting and excessive masturbation in young children. But a study of the meaning and the mechanisms of these difficulties enables us to discover the varying modes of dealing with guilt and anxiety which lie behind other forms of troubled behaviour in little children.

In addition to those just mentioned, there is every genetic reason for including within the group of neurotic difficulties the following, among others, of those daily met with in children under six or seven years of age: difficulties in relation to authority, such as excessive defiance or stubbornness; failure to respond to training in cleanliness; thumb-sucking and nail-biting; difficulties with regard to food and feeding; aggressiveness, jealousy, shyness, destructiveness, stammering, sleeplessness, and inability to bear being left alone.* Space will not allow me to go into the psychological structure of these and allied problems. I must content myself here with summarizing the general grounds for regarding them all as essentially neurotic in the genetic sense of the term I have already defined. And first of all, it must be said that it is especially to the work of Melanie Klein and M. N. Searl, after that of Freud, that

* When certain of these difficulties become excessively severe, however, so that the child seems to have lost hold even on a *child's* reality, the mental state has to be regarded as *psychotic* rather than as neurotic.

we owe our insight into the genetic significance of these sorts of childish behaviour.

Briefly, there are at least four good reasons for seeing these difficulties as neurotic in origin: (1) That only on Freud's theory of neurosis can their genetic relation to the general development of the child be comprehended within an intelligible whole: (2) that they are homologous with all the admittedly neurotic symptoms of the adult (with differences due to the difference in maturity); (3) that most if not all of them come and go as transitory expressions of anxiety in the course of any deep analysis, whether of adults or of children; and finally (4), that they yield to psycho-analytic treatment.

Of these four, the third is perhaps the most interesting, particularly with regard to such difficulties as sullenness, stubbornness, active defiance and aggression. No one who has either experienced the coming and going of these modes of dealing with anxiety in his own analysis, or seen their happening in the analysis of a young child, can doubt that they are only to be understood in terms of anxiety, and are thus of neurotic origin. The particular mechanism here is, of course, that of testing out aggressive phantasies in reality—seeing what *does* happen when one—e.g., screams or kicks, or says biting things.

II.—SOME EVIDENCE AS TO THE INCIDENCE OF NEUROSIS IN YOUNG CHILDREN.

(a) In the first place, it has to be said that there has not yet been any systematic survey of this problem either here or elsewhere. No reliable figures or facts are available. Perhaps the various Child Guidance Clinics and Institutes will have representative and objective information to offer us in, say, five or ten years' time.

(b) For the present, we have little to go upon but the judgment of experienced individuals.

As already suggested, those psychologists doing technical analytic work with children of a wide variety of types from two years of age and onwards have built up the impression that the great majority of little children suffer at one time or another and for longer or shorter periods from difficulties that cannot be understood otherwise than as neurotic symptoms of lesser or greater severity.

My own general impressions, observing young children in all the schools and families I know, and reflecting upon all those of whom I have had experience in my own researches and various forms of educational work, fully bears out this view. I find it hard to recall from twenty years' study more than a handful of children known intimately who have

not shown at least minor and transitory signs of neurotic conflict at one point or other of their early development. The frequency and severity of these difficulties differ very greatly from one child to another, but few if any are entirely and always free from them. In the slighter and more evanescent forms, neurotic symptoms are probably to be looked upon as one of the ways in which the ordinary everyday child deals with his internal problems of psychological adjustment, in the earliest years.

(c) During the last two years I have been doing advisory work by correspondence in connection with a popular weekly journal concerned with nursery problems of health and education. I have now received over five hundred and seventy-two letters from mothers and nurses, describing to me various problems of behaviour, or asking for practical educational advice. I wish now to analyse this material as some evidence bearing upon the incidence of neurotic difficulties among little children.

First of all something must be said as to the general worth of this sort of evidence.

(A).—The material is not gathered by me in first-hand observation, but derived from letters written by people of obviously varying ability to describe the facts fully and reliably. This is a definite drawback. Yet it carries with it one advantage, namely, that the actual description of the children's behaviour is made not by a person prejudiced in favour of particular theories, but by ordinary mothers and nurses, the vast majority of whom know practically nothing of psychological theory, and have hardly heard of psycho-pathology. They are, moreover, not out to "prove" anything, but simply to state a practical problem of their everyday life. The letters are thus human documents of the greatest psychological interest.

(B).—One source of unreliability lies in the fact that most of the writers lack comparative experience of the behaviour of children. They are thus liable either to exaggerate the degree of, e.g., defiance or fidgetiness, or to underestimate, e.g., the degree of fear, both errors arising from the fact that they have not the more objective standards of the worker in a clinic or laboratory who sees a great many different children. This material could thus not be used to estimate the distribution of degrees of difficulty with any exactitude. I have, however, encouraged my correspondents to write as fully as possible, and the letters in fact contain a good deal of qualitative description which enables me to arrive at a rough idea of whether or not the child's behaviour is anything out of the ordinary.

Using every sign available, it would seem that the severity of the difficulties ranges from rather mild to very marked. The majority of the cases, however, tend to be severe and troublesome ones, since mothers hardly bother to write long letters unless they are already puzzled, bewildered and distracted by their inability to deal with the children themselves.

It should be noted that all the children described come from good homes, the great majority being middle-class families where a nurse is kept and where there are none of the *grosser* faults of environment. Most of the children have their own nursery and enjoy modern methods of upbringing, at least as far as the physical side is concerned.

ANALYSIS OF LETTERS.

The total number of letters received to date is 572.

I have divided the problems put to me into two main groups : (a) Neurotic difficulties, and (b) Other problems. These "other problems" are mainly educational in type and I need say no more about them. In this group there are a hundred and ninety-four letters to date.

In Group A there is a total of three hundred and seventy-eight letters. The writers of these letters naturally do not themselves call the difficulties "neurotic," but simply describe the actual behaviour of jealousy, dirtiness, aggression, night terrors, or whatever it may be. The relative proportion of numbers in the two groups is striking, since there is no special encouragement given in my replies to the reporting of the neurotic type of trouble. I have shown myself just as ready to deal with the educational type of problem, and often in fact answer these questions much more fully, since they naturally lend themselves to more detailed advice.*

The following table gives a descriptive classification of the particular problems revealed in Group A. There are a few cases of individual children who appear in more than one of the categories.

* Readers may be interested to know what sort of advice I give in the neurotic difficulties. (a) In the case of children living in or near, e.g., London or Liverpool, or of those living in the country whose circumstances allow of a visit to London, or with children whose difficulties are obviously of excessive severity, I suggest that a specialist's advice should be sought, or a visit made to a Child Guidance Clinic or the London Clinic of Psycho-Analysis. (b) Where the difficulty is less severe, or where there is no possibility of consulting a Clinic or psycho-analytic specialist, my advice is aimed at lessening the anxiety of the parents, by showing that such problems are fairly common and that the child is not necessarily "abnormal," but may probably grow out of the trouble; and by suggesting such definite lines of handling the child which would be agreed upon by most people experienced in dealing with difficult children.

| Type of Problem. | Number of Cases. | | |
|---|------------------|-------|-------|
| | Boys | Girls | Total |
| (1) Children difficult mainly in relation to authority .. | 40 | 29 | 69 |
| (2) Fears, night terrors and anxiety | 20 | 39 | 59 |
| (3) Failures in cleanliness | 30 | 11 | 41 |
| (4) Thumb sucking | 13 | 14 | 27 |
| (5) Feeding problems | 17 | 12 | 29 |
| (6) Bed-time and sleep problems | 16 | 16 | 32 |
| (7) Masturbation | 11 | 15 | 26 |
| (8) Speech problems | 15 | 6 | 21 |
| (9) Aggression | 16 | 7 | 23 |
| (10) Jealousy | 11 | 8 | 19 |
| (11) Temper | 10 | 6 | 16 |
| (12) Nail-biting | 10 | 5 | 15 |
| (13) Excitability | 3 | 5 | 8 |
| (14) Shyness | 4 | 3 | 7 |
| (15) Destructiveness | 2 | 2 | 4 |
| (16) Lying | 1 | — | 1 |
| (17) Stealing | 1 | — | 1 |
| (18) Cruelty | — | 1 | 1 |
| (19) Tic | 1 | — | 1 |
| (20) Hypochondria | 1 | — | 1 |
| (21) Fixed phantasy | — | 1 | 1 |
| | | | 402 |

The details of the various groupings are as follows :

1.—*Difficult children* : (69 : 40 boys, 29 girls).

The first group includes chiefly cases of difficulty in relation to authority. Among them are: Constant defiance and disobedience, excessive stubbornness, sullenness, and going "rigid" in defiance; inability to accept any correction; over-sensitiveness to any sort of reproach; deliberate seeking of ways to annoy grown-ups; persuading younger children to do forbidden things; calling grown-ups rude names; general contrariness and negativism; persistent dawdling and "stealing time" over everything; open dislike for one parent; "showing off;" bad behaviour of various sorts when more than one adult is present, in children otherwise pleasant. The ages vary between 1:6 and 11:0 years, seventeen of the cases being six years or over. The following extracts will illustrate :

"I cannot cure him aged (3:6) of his stubbornness. I have found him stubborn in every way. If I have to correct him at table he immediately puts down his spoon and sits solid, until I either have to take him away from the table or force him into eating. He will go to bed or go without meals rather than give in. Tony's other trouble is that if I have to correct him he has always an answer for me and threatens to 'cry all night' or 'I'll wet my knickers,' and although I ignore him will keep his threat going for half an hour or longer, insisting that I shall hear him."

"Whenever I pick Alan (aged 1:11) up to dress him or undress him, he flings himself back rigid across my lap, not crying or upset at all, but just looking determined. It makes it impossible to dress him and it usually ends up with my losing my temper and giving him a sharp smack, which certainly makes him obey me but which I feel is quite the wrong way to treat him, and yet what else can I do? I have also tried standing him up to dress him, but he simply won't stand up but slides down on to the floor and lies there. You have no idea how maddening this is morning after morning when I am in a hurry, and although he has been doing this for weeks now I cannot see any reason for it at all."

2.—*Fears* : (59: 20 boys, 39 girls).

The problems grouped under *fears*, *night terrors* and *nervousness* include the following sub-groups : (a) general anxiety, becoming excessive in such situations as when the child has a small cut or abrasion on her leg, or is left alone in her cot. Here are included, too, cases of marked inability to part from the mother; hysterical tears on trying to join in a dance with other children, and intolerance of change of routine; (b) waking in terror in the night, either with a definite fear or in an inarticulate state of terror; (c) specific phobias of, e.g., insects, falling down a bank, anything grotesque such as Punch and Judy, pictures of animals with hats on, the laughter of grown-ups, rain and a waterfall, being put into the bath, the water running out of the bath, having one's hair washed, horses, aeroplanes, flapping things, large dolls, anything made of rubber (e.g., one child will not play at a table with a rubber doll on it), the newspaper boy, church bells, going downstairs, clouds, history lessons, Bible stories, taking medicine, tall people in dark clothes, anyone with a physical infirmity, dandelions, wireless poles, the chamber pot, the W.C. seat, a black motor car, fear of the mother going out lest *she* be hurt. All the cases reported were so severe as to make a serious practical problem in the home. Ages range from seven months to ten years, seven cases being six years or over. The following are illustrations :

The following case is of a child of two whose mother had to join her husband abroad. The child was put with a known and trusted woman friend under most favourable circumstances.

"For six days she (aged 2:0) was merry and happy, slept soundly as usual. Then she began waking at night (five and six times) crying 'Mam-mam-mam-mam.' She ran about uneasily in the day time. Night waking rapidly got worse and screaming got uncontrollable. (She was a never-cry baby.) The eighth day she started refusing food, the tenth and eleventh days she neither ate nor drank, no matter what was offered, nor how. A doctor saw her on the ninth day and said it was fretting. A second doctor saw her on the eleventh day—examined her most thoroughly, said she

couldn't be healthier, not a thing wrong—but very sensitive and fretting. She was then so ill and wasted that he ordered her home *that night*. She had lost two pounds—(a pound and an ounce in the last five days). I met the boat and found a pale, sober, straight-haired, loose fleshed baby in place of my rosy brown, curly, laughing sturdy Babs. She gave a huge sigh of content when she saw me, but never smiled for half an hour. She gradually relaxed and after a little breakfast which she took greedily from me, she slept well and long. (She had not eaten or slept at all for two days and very little for four.) She mended rapidly, ate hugely and in two days was merry as a lark."

"Often if his Mummie and I laugh suddenly over a joke he (aged nearly one year) sobs broken-heartedly. I met a friend and she spoke to him and then laughed and he was awfully upset. During the walk together he made a comical face and we both chuckled and again he was very upset."

"For the last three months my small son (aged four and a half) has been waking in the night—or rather, the early hours of the morning—crying out in an unhappy little voice that he 'sees nasty things.' Frequently, too, when he is just falling asleep at night, he will say that he is 'afraid to close his eyes because he sees things.' He seems unable to describe them, except that they are 'very, *very* nasty' and sometimes he says 'they bite.' On being gently assured that there is nothing there that could hurt a little boy with Nannie or Mummie beside him and a big 'Daddy' so near, he replies, 'Yes, I *know* that, but I *think* them.'"

"My baby girl is just nineteen months old, and up to a week ago has thoroughly enjoyed having her bath at bed times. Then suddenly, without any apparent reason whatever, she has quite refused to be put in the bath. She stiffens out and screams as if terrified. I have tried all ways, cajoling, smacking, bribing, but she *will not* sit—or even stand up in the water."

"She is three years old, and very intelligent, but extremely nervous. If she should fall in the house, and slightly hurt her knee, she will scream to have her outdoor leggings put on to cover it, and if we remain firm about not putting them on, she will cry until she is terribly sick, and her heart beats twice as quickly with fright."

"My little girl of two and a half has an absolute terror of women, or I should say, all women she does not know very well. She has been like this ever since she just sat up, and for some time we took little notice of it, and thought she would grow out of it, but she seems gradually to be getting worse. I don't think you would call her shy, for she will chat with all and sundry when she is out in her pram, though always showing a preference for men. The great difficulty is if we have a visitor to the house. If it's a gentleman she is perfectly all right and will sit on his knee chattering away in a most friendly manner, but if she comes into the room and finds a strange lady, she just stands and looks at her for a minute, and then bursts into tears, which gradually develop into a sort of hysterical screaming, and no amount of soothing or reasoning will get her to stop until she is taken out of the room. There is no question of naughtiness or temper, it is absolute terror."

3.—*Cleanliness* : (41 : 30 boys, 11 girls).

The following types of problem occur under this heading : bed-wetting ; persistent refusal to use the pot either or both for urination and defæcation, this refusal ranging from constant failure to ask for attention in time, to absolute obstinacy to use the pot when presented, or absolute terror and screaming at the sight of it ; severe constipation ; refusal to urinate when held out at 10 p.m., or screaming and restlessness through the night if held out then ; wetting the floor or a particular piece of furniture in the night time ; and one case of complete adaptation to the pot *only*, so that the pot has to be taken about wherever the child goes. These cases vary in degree from mere lateness in acquisition of control to severe obstinacy and terror at a later age, the age range being 10½ months to 13 : 0, three children being six years and over.

Some of the cases of supposed lateness of control are in fact examples of faulty standards on the part of mothers and nurses, who have expected the children to be clean at too early an age.

There are, however, only a few of such clear mistakes of judgment. And most of the cases of failure in cleanliness reported at an early age—twelve months to three years—are of the greatest psychological interest because of the fact that they are children who have been carefully “ conditioned ” by modern methods, the child having been given regular opportunities to use the pot from the earliest days. More interesting still, in the majority of cases, they have responded perfectly to this routine during the later months of the first year, so that it appeared as if regular habits were firmly established. And then at fourteen months, eighteen months, two years and so on, have suddenly become extremely dirty again, and often most stubborn in their dirtiness.

This seems to me one of the most interesting facts yielded by this material, since it throws such a light upon habit psychology in general and Watsonian conditioning methods in particular. Modern practice in infant training is quite explicitly based on naive habit theories, and this evidence of its inadequacy is thus of great theoretical importance.

Whenever I have discussed this question with groups of mothers and nurses, I have received confirmation as to the frequency of such breakdowns. It would be very valuable to have statistical evidence on the point, and the problem offers a particular field of research which would greatly repay attention.

It is, moreover, extremely interesting to find that the suggestions offered by my material as to the frequency of this breakdown in apparently well established early habits of control is fully confirmed by such an

experienced physician as Dr. D. W. Winnicott. In his recent book, Dr. Winnicott remarks : " . . . it is common for 'clean' babies to start to wet their bed at two, three and four years, and it is even possible that if a baby has been made 'clean' early by very *active* training measures, the likelihood that enuresis will appear in the difficult years is increased."

The following are illustrative letters :

" She (aged sixteen months) was trained from birth to be a clean baby, but within the last two months she has persistently fought and screamed every time the chamber is produced. When she comes in from the garden she is immediately held out, but I can never get her to do anything—and she does nothing but pinch me and go perfectly stiff on my lap. Then after she has played around for a few minutes she will wet herself, and looks up at me as if she knows that she has been naughty."

" My baby boy, aged two, has suddenly, after having been practically perfectly clean in his habits since he was a year old, taken to wetting his trousers. Smacking has not helped—in fact he comes up to me and in my face, though with no defiance, he says 'Mama, I'm wee-weeing.' When I say angrily, 'What will Mama do now?' he says 'Give me a good smacking.' He gets it, but an hour later repeats the performance."

4.—*Thumb Sucking* : (27 : 13 boys, 14 girls).

This group includes the sucking of thumbs or fingers, of the sheet or corner of the table cloth, of woollen things, of fluff or dust picked off from the floor; three interesting cases of "head-knocking"; one case of nose rubbing, and one of tapping with a stick in a way that is comparable to these other habits. The habits reported occur either by day or by night or both, and have all shown themselves refractory to treatment by scolding, coaxing, punishment, bitter aloes, gloves, binding the hands, etc. The ages range from eleven months to seven years eleven months, only two children being six or over.

5.—*Feeding Problems* : (29 : 17 boys, 12 girls).

The problems with regard to food and feeding include the following : refusal to eat particular foods (e.g. jelly, milk, white of an egg, the meat course, etc.), this refusal being either habitual or of a sudden onset ; general unwillingness to eat unless coaxed or pressed or spoon-fed or talked to entertainingly ; taking a long time by dawdling or playing ; refusal to eat anything but soft food ; refusal to drink at all ; gobbling and cramming, with tears and temper if this is interfered with ; restlessness and fidgets at the meal, hysterical vomiting at particular foods (not necessarily the same foods every day) ; "parking" the food in the side of the mouth for an indefinite time and refusing to chew or swallow

it; "talking nonsense" as soon as the meal starts and showing disagreeable obstinacy if this is prohibited; sudden screaming at the sight of the meal or in the middle of the meal; rage and screaming even when the food offered is known to be liked, and rolling on the floor in rage at its being offered; throwing plate or spoon on the floor as soon as the meal starts, etc., etc. The age range is from one year two months to six years five months, one case being over six years.

"Occasionally at meal times she (aged 1;6) starts to scream for apparently no reason, and perhaps gradually works herself up, until it is impossible to continue with her food. Often she has a spasm of getting up when 'seated,' and when put back again, she obeys quietly enough, but screams and screams at the same time."

"She (aged sixteen months) is always ready for her food, and gets very excited when she hears it being brought up, but the minute I start feeding her she starts to cry. Sometimes it's only a sort of grizzle to start, but often ends in a very loud scream. She wants the food, but is crying the whole time she is eating."

"I have great difficulty with him (aged nearly five) at meal times—dinner being the worst meal of the day. He never seems eager for food and at dinner time often flatly refuses to touch his food and sits at the table drawing pictures on the cloth with the forks and spoons. For the sake of peace and quiet I usually have to spoon-feed him myself talking to him all the time and trying to distract his attention while I am doing this."

6.—*Bedtime and Sleep* : (32 : 16 boys, 16 girls).

These include : screaming when left at bed-time or on waking in the night, the screaming sometimes continuing for hours unless an adult stays with the child; other signs of nervousness at being left alone; complete wakefulness for hours either at bed-time or in the night; very early waking in the morning; talking aloud about imaginary people when supposed to be asleep; refusal to let anyone but mother put to bed; terror and anger *if* the mother puts child in cot, but not if anyone else does. (Not included here are actual phobias, night terrors, and giggling and laughing in bed.) Age ranges from six months to nine years six months, three cases being over six years.

One of the most interesting cases is the following, a boy of two years :

"Prior to January last I have had absolutely no trouble in putting him to bed, and he would be happily asleep in two minutes. Then he had a long illness in which I nursed him myself for the first six weeks. Under the doctor's advice I took him up when he cried and nursed him so that he should not waste what little strength he had. Now he is just as good *so long as anyone except myself puts him down*. For me he refuses to go into either cot or pram. I dare not leave him to cry it out for he works himself

up into such a frenzy of rage and holds his breath until he is unconscious. Up to now I have partly solved the problem by letting my help do the actual putting into pram or cot, into which he will go with no protest even if I am in the room. Twice a week when she is out we have a scene and it takes me half an hour or more to get him into his cot. The difficulty lies in getting him to go into his cot at all and I have only to approach the cot with him in my arms to provoke a storm of crying. Once he is in and tucked up he soon settles and does not mind my leaving him."

7.—*Masturbation* : (26 : 11 boys, 15 girls).

These are mostly cases of genital masturbation in different positions, either by night or day or both ; but included also are three cases of "giggling and laughing in bed," one of which was definitely associated with genital masturbation, the other two probably being so as well. Age range eight months to seven years, two children being over six years.

"Since she was eight months old she (aged 2 : 5) has indulged in bad habits. At first she simply rubbed her thighs by crossing her legs. I have taken her twice to a children's specialist. The first time, March, 1931, he said we were to distract but not to scold her. We did distract her but with no success. Her nurse was very patient. The second time, September, 1931, he said she must be stopped at all costs and if everything else failed we would have to try apparatus. I had a trained hospital and maternity nurse with me at the time. She and I never left the child and after a fortnight she was much better. Then she found other ways of rubbing (sitting with her heel under her, standing with one leg lifted, sitting with legs tightly together though not crossed) and since then she has been gradually getting worse. She is unusually intelligent (this is not merely my opinion)."

"C. is a strong healthy child (aged 3 : 6) and has been brought up on Truby King lines, but he has a habit which I seem powerless to break. When I put him down to sleep at night he very often keeps himself awake for a very long time by laughing and shouting. This habit started at least a year ago and has been gradually getting worse. The same thing happens if he wakes in the middle of the night. He sleeps in a room alone and often my husband and I have woken up to hear peals and shouts of laughter. Also he does this when he wakes in the morning, i.e., between 5 and 6 a.m. As I write this down it seems a trivial matter but I don't think it is. It does not seem a natural laughter, and apart from the actual laughing he makes queer growling noises. One or twice I have asked him what he was laughing at and he says 'I am laughing at ladies and babies,' and once I asked him why he laughed and he said 'I can't help it—I must.'"

8.—*Speech* : (21 : 15 boys, 6 girls).

This group includes cases of backwardness or complete inhibition in speech, the majority, however, being cases of stammering. Age ranges from two years ten months to thirteen years, six children being six years of age or over.

9.—*Aggression* : (23 : 16 boys, 7 girls).

Cases are included here of aggressive behaviour toward *people* only: biting, scratching, kicking and hitting, throwing things, teasing, etc. Age ranges from one year to eight years, three children being six years or over.

"Although she (aged 2 : 6) is very sweet-tempered and loving, she has lately developed the habit of smacking people—sometimes for no reason at all, or if only mildly annoyed. Or she will even smack her own head or try to twist her hand off saying 'Pulling hand off,' even her beloved 'Teddy' and 'Golly' do not escape. They have lately been squeezed or pressed on the floor unmercifully, the accompanying remark being 'Break Golly. Poor Golly!' These curious actions are not as a rule done very violently, nor is her voice malicious—though she sometimes grinds her teeth together."

10.—*Jealousy* : (19 : 11 boys, 8 girls).

These are all clear cases of definite jealousy, chiefly of other children, particularly younger ones in the family; but including also one or two of jealousy directed towards adults. Age ranges, one year ten months to nine years six months, two children being over six years.

"He (aged 3 : 0) whines at nothing, hangs about me and if I get anyone into the house he won't go near them. My wee girl was born last January and he is very jealous of her, even to-day, hits her—molests her in general."

11.—*Temper* : (16 : 10 boys, 6 girls).

Included here are only those cases of temper which do not appear in any other group. The temper is shown in a variety of ways, screaming, shouting, lying on the floor and kicking, etc., and is in each case of an excessive and hysterical degree. The causes of temper described are : all sorts of thwarting or denials, and such interferences as dressing and undressing, being called to a meal, or having to go out for a walk. Age ranges, one year to eight years, two cases being six years or over.

"My little boy is one year nine months old. He is very healthy and full of life, but if crossed in any way, such as not allowed to go out when anyone comes to the door, if his engine turns over or if checked for doing wrong, he gets down on his knees and bangs his forehead on the floor several times as hard as possible, or against the wall. He must hurt himself, as he cries."

12.—*Nail Biting* : (15 : 10 boys, 5 girls).

Here are included also one or two cases of nail picking. All are cases which have proved refractory to treatment. Age ranges, one year six months to six years, two children being six years.

13.—*Excitability* : (8 : 3 boys, 5 girls).

These are children who show excessive emotional response to any exciting situation, or a general fidgetiness. Age ranges one year two months to six years six months, two cases being over six.

14.—*Shyness* : (7 : 4 boys, 3 girls).

These cases include such behaviour as : hanging one's head and looking sullen when strangers appear or when going out amongst other people ; definite dislike or fear of all strangers ; and specific refusal to respond to conventional forms of greeting. Age ranges, ten months to three years two months.

15.—*Destructiveness* : (4 : 2 boys, 2 girls).

These are examples of destructiveness to things, such as tearing the wall paper, breaking toys, either the child's own or other people's ; breaking the possessions of grown-ups ; suddenly throwing things into the fire ; or chewing books. Age range, two years six months to four years six months.

VALUE OF THIS EVIDENCE.

What, now, can be said as to the value of all this material with regard to the incidence of neurotic difficulties of greater or less severity amongst young children in general ?

In the first place, it is clear that the mere number of these letters has no statistical value either way. It might, for instance, be said that the number of readers of the journal in question who do not write to me is much larger than the number who do, and that all these children, therefore, are quite exceptional. The actual proportion of those who have presented problems of neurosis up to date is roughly one in fifty, the circulation being claimed as twenty thousand. But the whole work has only been going on for twenty-three months, and next week or the week after is certain to bring me a letter from any one of the regular readers who has not yet put a problem to me, since they come in at the rate of five or six a week. The fact that readers have not yet written, moreover, says nothing at all as to the presence or absence of this sort of difficulty, since I often receive letters beginning "I have read your replies to correspondents for six months, a year, nearly two years," and so on. Nor would even the fact that they never did write mean anything either way, since they might abstain in spite of having such problems, either because they had no belief in the usefulness of my advice, or,

conversely, because their particular questions had already been dealt with in a reply to someone else.

The letters actually received up to date can, therefore, be regarded as having a *positive* evidential value in the hint they offer as to the probability of difficulties serious enough to lead parents to seek advice being at least far more widespread than some psychological theorists would admit. These letters are to be looked upon as a *sign* rather than as a measure—a sign confirming one's impressions from general experience, but pointing more than anything to the need for further observation and research.

(d) In support of the view that troubles arising from anxiety sources are much more common than is yet realised either by the academic psychologist or by medical men, I may again quote Dr. D. W. Winnicott's view that a great many of the supposedly physical disorders of early childhood are in fact the outcome of anxiety.

III.—THE QUESTION OF THE INFLUENCE OF THE ENVIRONMENT.

In my brief introductory statement of the theory of neurosis upon which my approach to this material is based, I emphasized the internal psychological factors in the neurotic symptom, rather than the external factors of circumstance and real happening. The view that the internal factors are on the whole the more important is generally held by psychoanalysts (especially perhaps in England). It is held that real experiences of one sort or another gain their power to induce neurosis from the way in which they happen to fit into the given psychological situation of the child at the time of their occurrence, with especial reference to the particular phantasies which are dominating the child's unconscious mental life.

Other schools of psychology and Child Guidance, as is well known, lay stress almost entirely upon the environmental factors. It seemed to me, therefore, that it would be of interest to draw attention to cases of children reported or known to me personally in which there seems to be very clear evidence that real happenings were either (a) of the kind which is a part of universal human experience, and in itself normal and unavoidable—such as the birth of a younger child, or (b) so slight a happening as not to be noticeable to anyone but the child himself, who invests a minor event with enormous significance.

Overlapping with this group of cases are those specially interesting ones where the onset of some form of difficulty was sudden or fairly sudden, the child having up to this time been "placid and happy" and "perfectly

easy to manage." These sudden changes are practically all within the period from the latter months of the first year to the end of the fourth or perhaps fifth year. In my notes I have records of twenty-eight children in whom a sudden difficulty of one sort or another arose.

The difficulties which have thus suddenly appeared are varied, but include, e.g., great general anxiety, marked contrariness, serious difficulties in feeding, bed-wetting, refusal to use the pot for defæcation, phobias, night terrors and nail biting. In all these twenty-eight cases, the mother or nurse reports a contented placid infancy preceding the onset of the disturbance, and in none of them is there any *knowledge* of an external event which could have acted as an adequate stimulus. There has not been, e.g., any change of nurse or loss of a parent, any alteration in methods of handling, any terrifying experience with an animal or older child or stranger, etc., etc.

The question arises as to how far such reports as to *sudden* changes occurring without apparent cause can be relied upon, and one can certainly see various possibilities of distortion. The degree of previous ease and contentment is pretty certainly exaggerated in memory, since the "perfectly placid" baby is rare indeed. But even allowing for this, there seems no reason to doubt that there is some real and sudden contrast in the behaviour of the child which puzzles his mother or nurse completely. As regards the further possibility of the adult's overlooking or forgetting or hiding some real event which might have brought about the disturbance, this seems to me rather improbable in the general way, although it might happen in odd cases. Most mothers and nurses seem only too glad when they can find such a real happening to blame for what otherwise might be charged to the door of their training of the child.

Even allowing for possible exaggerations, therefore, the probable facts with regard to these cases of sudden onset of difficulties remain extremely interesting and challenging. In the twenty-eight cases under attention, it seems possible, reading between the lines of the letters describing six (but only six) of them, to hazard a guess as to a change in circumstance which may well have precipitated the difficulty. In two of the cases, the infant had been taken away for a holiday with the parents, and it seems not unlikely that the child had been allowed to share the parents' bedroom, although sleeping in a room alone at home in the ordinary way. In four other cases the outbreak of difficulty was definitely associated with the birth of a new baby, or the mother's pregnancy.

As I suggested when discussing the outbreak of difficulties with regard to cleanliness in the second to the fourth years, with children who had apparently accepted training easily and satisfactorily, the facts provide one of the most interesting comments that can be made upon "conditioning" theories of infant psychology. They raise the further question whether it is not possible that a great deal of the time spent in the modern nursery on the painstaking attempt to build up regular sphincter habits from birth may not be wasted. It is indeed not impossible that it may be worse than wasted, since (a) it may lead to too severe a sense of guilt in the child about lapses from cleanliness; and (b) it may (and probably does) tend to cause altogether unnecessary worry in the mind of the mother or nurse if the child does fail in his second and third years.

On this, however, and on the main question of this paper, that of the incidence of neurotic difficulties in infancy and early childhood, all that can be said dogmatically is that a vast amount of detailed research waits to be done.

I would like to close by saying that I look upon the facts and figures offered here as nothing more than a pointer to the open field of observation and enquiry which calls for close investigation by every method we have at our disposal—the accurate observation of the child's actual behaviour no less than the psycho-analysis of his inner mental life.

The special interest of the actual instances of neurotic difficulty quoted here (and to be amplified in the next number of this Journal), lies in two facts: (a) that these children are all from very good middle-class homes; and (b) that the great majority of them (342 of the 400 cases) are children under six years of age. In these two points, the material offered contrasts with that typically gathered by the various Child Guidance Clinics.

IV.—SUMMARY OF CONCLUSIONS.

(1) There seems reason to think that neurotic difficulties of many different types, and of varying grades of severity and persistence, are fairly common among children between one and six years of age. In the slighter and more evanescent forms, they would seem to be an ordinary feature of "normal" development; but the severer forms requiring environmental changes or treatment are far from rare

(2) It would seem that neurotic difficulties may sometimes arise suddenly in children living in a favourable environment. But environmental influences and real events are nevertheless of great importance,

chiefly in determining whether or not a child will "grow out of" his early difficulties. They gain their power mainly from the extent to which they happen to fit in with the dominant phantasies of the child at the time.

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RÉSUMÉ.

QUELQUES OBSERVATIONS SUR LA FRÉQUENCE DE DIFFICULTÉS NÉVRITES CHEZ DE JEUNES ENFANTS.

La fréquence de difficultés névrites est importante et pour la tâche du diagnostic et pour la compréhension théorique du développement émotif de l'enfant. Par difficulté névríte il faut entendre l'expression d'une inquiétude due à l'oppression de l' "ego" par des désirs agressifs et libidinaux qu'il faut dompter et régler.

Le témoignage quant à la fréquence de difficultés, telles qu'on en considère ici, provient de lettres descriptives envoyées par les mères, ou les bonnes, d'enfants appartenant à la bourgeoisie aisée. Sur 572 lettres demandant conseil, 378 soulèvent des problèmes de difficultés névrites. Ceux-ci sont classés et on en cite des exemples. Les témoignages suggèrent que des difficultés névrites de types fort variés, et de tous les degrés de gravité et de persistance sont fréquentes chez des enfants de 1 an jusqu'à 6 ans et que les formes plus graves ne sont aucunement rares.

De plus, on cite 28 cas d'enfants au-dessous de 5 ans qui ont subi une attaque de difficulté après une première enfance tranquille sans qu'on ait soupçonné de changement dans le milieu. Ces cas indiquent que les facteurs intérieurs sont peut-être plus importants que les extérieurs, cependant ceux-ci sont probablement plus significatifs à décider si, ou non, la difficulté disparaîtra d'une façon naturelle avec la croissance de l'enfant.

ÜBERSICHT.EINIGE BEMERKUNGEN ÜBER DAS VORKOMMEN NERVÖSER
HINDERNISSE BEI JUNGEN KINDERN.

Die Frage des Wiederkommens nervöser Schwierigkeiten ist bedeutend sowohl für die Diagnose als für das theoretische Verständnis der Entwicklung der Gemütsbewegungen bei Kindern. Betrachtet man eine nervöse Schwierigkeit als eine Äusserung der Unruhe, die aus dem Druck libidinöser und aggressiver Wünsche auf dem Ich entsteht, die beherrscht und im Zaume gehalten werden müssen, so versteht man sie am besten.

Der Beweis für das häufige Vorkommen solcher Hindernisse, die hier in Betracht gezogen wird, entsteht aus beschreibenden Briefen von Müttern und Kindermädchen aus guten, bürgerlichen Häusern. Aus 572 Briefen, die um Rat fragen, enthalten 378 Probleme nervöser Schwierigkeit. Diese werden klassifiziert und Beispiele werden gegeben. Der Beweis lässt denken, dass vielerlei nervöse Schwierigkeiten von allen Stufen der Ernsthaftigkeit und Beharrlichkeit häufig bei Kindern vom 1. bis zum 6. Lebensjahr vorkommen, und dass die ernsteren Arten keineswegs selten sind.

Noch dazu bespricht man 28 Fälle von Kindern unter dem 5. Lebensjahr, die einen plötzlichen Anfang von Schwierigkeit nach einer ruhigen Jugend zeigen, ohne dass man von irgend einer Änderung der Umgebung weiss. Diese Fälle weisen auf die Möglichkeit hin, dass innerliche Faktoren wichtiger sind als äusserliche; aber diese sind wohl von grösserem Belang, wenn man feststellen will, ob das Kind mit der Zeit die Schwierigkeit in der normalen Weise hinter sich lassen wird, oder nicht.

THE STANDARDIZATION OF GROUP TESTS AND THE SCATTER OF INTELLIGENCE QUOTIENTS.

A CONTRIBUTION TO THE THEORY OF EXAMINING.

BY GODFREY H. THOMSON

(*Moray House, University of Edinburgh*).

- I.—*The Meaning of Standardization.*
- II.—*The English examination system at eleven-plus.*
- III.—(a) *Straightforward standardization.*
 - (b) *The wrong regression line?*
 - (c) *The selection difficulty.*
 - (d) *The exodus at eleven-plus.*
- IV.—*Other methods of standardization.*
 - (a) *From monthly averages.*
 - (b) *From a Binet group.*
 - (c) *From a previous group test.*
 - (d) *From the scatter of intelligence quotients.*
- V.—*The standard deviation of Binet I.Q.'s.*
- VI.—(a) *A digression on "creaming."*
 - (b) *Replacing the cream.*
- VII.—*The standard deviation of group test I.Q.'s in uncreamed groups.*
- VIII.—*Slopes of the annual and monthly lines of norms.*

THIS paper summarizes some of the results of twelve years' experience of making group tests of intelligence (and lately of English and arithmetical attainments as well) for a number of local education authorities. The main interest of the paper to the writer, and probably to most readers, lies (1) in the difference definitely and invariably found between the scatter of Binet I.Q.'s and group test I.Q.'s, and (2) in the probably allied but less certain phenomenon of a discrepancy between annual and monthly norms for a test, a discrepancy which may possibly be due to, and form a measure of, coaching, or at least special preparation for the tests; or, alternatively, of the extent to which the "lockstep" survives in a district, involving lack of free promotion for the gifted and a disinclination to employ group or individual methods of teaching or learning within the class organization.

The diagrams and tables given in the body of the article are drawn from a large number which have been accumulated as a result of the use

of the Moray House Intelligence Tests, of which twelve* have so far been made. These intelligence tests are not all alike in form and structure, for changes have annually been made in the endeavour to improve them. They usually, however, take forty-five minutes to administer, and consist of from 60 to 137 items. A portion of Moray House Test 11 is given in Appendix IV as a sample. A "shock-absorber" test of ten minutes' duration is always given on the day preceding the test proper.

I.—THE MEANING OF STANDARDIZATION.

By standardization is meant the finding of a line of norms for a test, and a method of calculating some form of generally understood score, such as, especially, a mental age and an intelligence quotient. Good standardization is not the only thing necessary in making a test: validity and reliability are equally necessary. By the validity of a test is meant the degree to which it does actually measure what it purports to measure (here intelligence) and not something else: and by reliability is meant the degree to which different forms of the same type of test give results in accord with one another. Validity and reliability are, however, not discussed directly in this paper (which is concerned solely with standardization) except in so far as the possibility arises that certain phenomena of standardization are due to group tests measuring school work, as well as native intelligence, i.e., due to the tests being not entirely valid tests of the latter.

Standardization is never complete, but always in process of correction and improvement. Before a test is used in any important examination or inquiry, it ought of course to be standardized on other groups of subjects: but this previous standardization needs modification in the light of the results obtained in the actual inquiry itself, especially if, as often happens, more subjects are concerned in the inquiry than could be used in the preliminary work. A frequently occurring situation is that the test is given to a solid year-group (the eleven-year-olds) by a local education authority: and here, in addition to using preliminary experiments and also calculations on the eleven-year-olds themselves, it is very desirable to have the test given simultaneously to a "background" school or schools, using as wide an age-range as is possible, say 8 to 14. The lines of norms reached by these different methods will not exactly agree, and both mathematical methods, and the intuition which comes from familiarity with the work, are needed to arrive at the best line of norms to use.

* Together with two of English, and two of arithmetic.

As so much of the work described in this paper has been done in connection with the eleven-year-old examination in England, it is desirable here to say something, especially for foreign readers, about this important landmark in the educational life of an English child.

II.—THE ENGLISH EXAMINATION SYSTEM AT ELEVEN-PLUS.

The English state-school system involves attendance at the common primary school until the end of the school year after the eleventh birthday. At this age of "eleven-plus" a trifurcation of the educational path appears and the child may go forward into a secondary school, or a selective central school, or a prolongation of the primary school (a "higher-top"). There are variations both of actual custom and of mere nomenclature in the different authorities—for example, a non-selective central school may embrace the latter two of the above three categories—but they are unimportant to us here, the main point being that some method is needed of deciding which path the child shall take. This usually assumes the form of an examination in English and in arithmetic, with, in an increasing number of cases, an intelligence test, and almost always with an interview for the borderline candidates.

Some local education authorities submit the whole eleven-year group, whatever the position reached in the school, to the same compulsory examination. Others examine only the candidates, after a previous and less formal sifting by head teachers or by small local committees, usually with the safeguard that a child may be presented as a candidate by his parents even if not put forward officially.

These different procedures naturally need different treatment in the matter of standardizing the test used. If only the candidates take the test, one is almost entirely thrown back on previous standardization and on standardization by a simultaneous background school; for it is nearly impossible to learn how efficient the preliminary sifting has been, whether it has equally affected the different months of birth, and to what extent unofficial and probably not very good candidates have presented themselves.

Another complication arises from the not infrequent practice of allowing a few, or even a good many, of the cleverest ten-year-old children to take the test along with the eleven-year-olds, and to win free secondary school places if they are good enough. The difficulties of standardization to which this process of "creaming" off the best under-age candidates gives rise are discussed later.

Other authorities, instead of permitting under-elevens to enter, examine both the eleven and the twelve-year-olds, thus equally with the

other procedure giving a second chance to any ambitious candidate. From the statistician's point of view this plan is superior, for it ensures a complete uncreamed eleven-year-old group.

It should finally be explained, in this connection, that the ages of the candidates are invariably reckoned on the 1st August (or the 31st July) following the examination and test. As the latter takes place some time during the spring, the group officially called the eleven-year-group (officially ranging in age from just 11 years to just not 12) is really on the day of examination spread in age from about $10\frac{1}{2}$ to $11\frac{1}{2}$, and it is necessary, in making all calculations, to correct the official ages by the amount of this discrepancy. And so too with the other age-groups if any are examined.

III.—(a) STRAIGHTFORWARD STANDARDIZATION.

The straightforward process of standardizing a group test is simple enough, and is illustrated in Figure 1. As many children as possible of each age from about 8 to 15 are submitted to the test. The average score of the eight-year-olds is found, and the average score of each of the other year groups, and a curve is made by using these average scores as ordinates, and the ages $8\frac{1}{2}$, $9\frac{1}{2}$, $10\frac{1}{2}$ and so on as abscissae (or the actual average ages of the year groups if these are small). This is the lower curve in Figure 1, and it usually is straight in its middle portion, bending as shown near its beginning and end.

From such a line of norms the mental age of a candidate is found by the method indicated by the dotted lines in Figure 1. From the candidate's score at the left one proceeds horizontally till the curve of norms is reached, then downwards vertically to read off the mental age. From the method of construction of the curve, the mental age will agree with the chronological age for the average child, and the line of norms is therefore labelled 100 I.Q. (intelligence quotient). If the child's age differs from the mental age thus found, its I.Q. will differ from 100 and will be found in the usual way from

$$\text{I.Q.} = \frac{\text{Mental age}}{\text{Chronol. age}} \times 100.$$

The scores made by the average child of I.Q. 100 is some mathematical function or other of the age a ,

$$s = F(a).$$

If the child is not average but, say, of I.Q. 120, his mental age will be not a but $1.2 a$, and the scores which he will make as he grows older and older will be represented by the curve

$$s = F(1.2a);$$

where F stands for the same function as formerly. This curve is also shown on Figure 1 and is labelled I.Q. 120; and other curves could in similar fashion be drawn and labelled I.Q. 70, 80, 90, and so on. There would then be two ways of using the figure, which would give identical results: (1) Using the 100 I.Q. line only, from the score the mental age could be found and hence the I.Q. by division by the true age; (2) Using the score as ordinate and the true (chronological) age as abscissa, a dot could be made, and the I.Q. read off from the line on which this dot falls, or by interpolation if it falls between two.

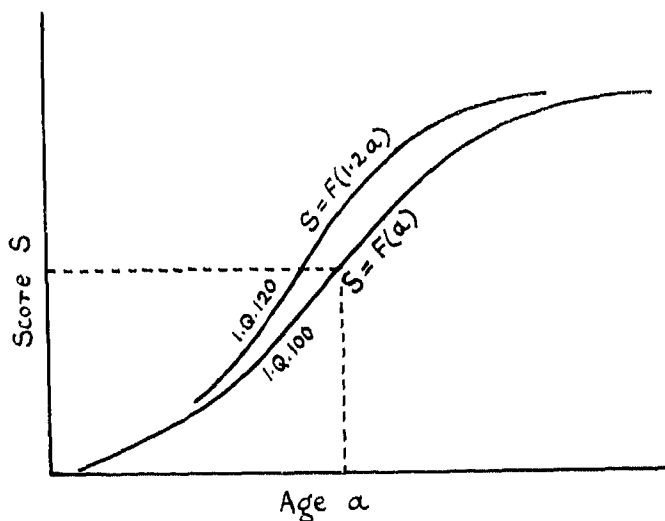


FIG. 1.

A Line of Norms, and the corresponding line for I.Q. 120.

III.—(b) THE WRONG REGRESSION LINE?

To anticipate a possible objection to the above procedure on theoretical grounds, it is desirable to refer here to the existence of two regression lines whenever two correlated variables (as here age and score) are tabulated, and to recall that L.L. Thurstone, in the *Psychological Review* for 1926 (XXXIII, 268-278), urged that the regression line used in our present Figure 1 is not the proper one to use. Instead, the line joining points of average age for constant score should, he said, be used. That is to say, instead of one point of the line representing the average score of a number of children all of the same age, it ought to represent the average age of children who all obtain the same score. It is unnecessary to do more

here than refer to my article in the *Psychological Review* for September, 1928 (XXXV, 398-413) in which it is shown that this is not the case, the reason being that age is not an ordinary variable with a most common value from which it diminishes in frequency in both directions. As a consequence, that other regression line is in practice an artificiality depending on the age limits employed, while the regression line we have used in Figure 1 agrees within very close limits indeed with the other line, could the latter be determined for a complete age range from birth to old age ; and is therefore the practical line to use.

III.—(c) THE SELECTION DIFFICULTY.

A serious practical difficulty, however, with this straightforward method of standardizing is that of getting a fair sample of children at each age. Above the age of eleven it is necessary to reassemble the children from the different schools (secondary, central, etc.), to which they have separated. Below eleven, unless one is very insistent indeed, one tends to get a better and better sample of the children (intellectually) as one goes to ages 10, 9, 8, and perhaps 7 : not because the teachers or authorities wish to make difficulties, but because as a rule they tend to give the test not to certain ages but to certain standards or departments, and the duller children have not yet reached these standards. The only safe way here is to have a complete school tested, insisting on *all* above a certain age being included, however low they may be in the school. Otherwise the line of norms obtained would be too flat, being made from progressively cleverer children as younger ages are reached.

A good method of overcoming this selection difficulty very largely is that which I employed in standardizing the Northumberland Mental Test No. 1. It is best explained by reproducing Table I, based on 2,532 cases, from my article "The Northumberland Mental Tests," *Brit. Jour. Psychol.*, 1921, XII, Part 3.

TABLE I.
AVERAGE MARKS OUT OF POSSIBLE 60.

SCHOOL STANDARD OR GRADE.

| Age. | II. | III. | IV. | V. | VI. | VII. | VIII. |
|------|-----|------|------|------|------|------|-------|
| 14½ | — | — | — | 21·5 | 36·5 | 44·1 | 42·6 |
| 13½ | — | 8·8 | 15·6 | 23·6 | 31·6 | 41·6 | 45·1 |
| 12½ | 4·8 | 9·1 | 12·5 | 22·8 | 31·4 | 42·7 | 52·8 |
| 11½ | 3·4 | 8·7 | 14·1 | 23·8 | 35·0 | 45·9 | 46·8 |
| 10½ | — | 8·6 | 15·5 | 23·7 | 31·8 | 47·0 | — |
| 9½ | — | — | 18·2 | 26·8 | — | — | — |

This table shows the average marks obtained by each age of child in each school class. Clearly to take the averages of the rows (the ages) would give a wrong standardization, for the surviving $14\frac{1}{2}$ -year-olds are nearly all retarded children, and the best $13\frac{1}{2}$ -year-olds and even $12\frac{1}{2}$ -year-olds have left the primary school: while at the lower end the dull $9\frac{1}{2}$ and $10\frac{1}{2}$ -year-olds are missing.

It is best, therefore, under the circumstances to use, for the standardization, only the scores of children who are neither accelerated nor retarded in school, i.e., the four heavy type numbers shown. The $14\frac{1}{2}$ -year-olds are omitted as being definitely the remains only of the group (there were only five cases in the top right hand cell).

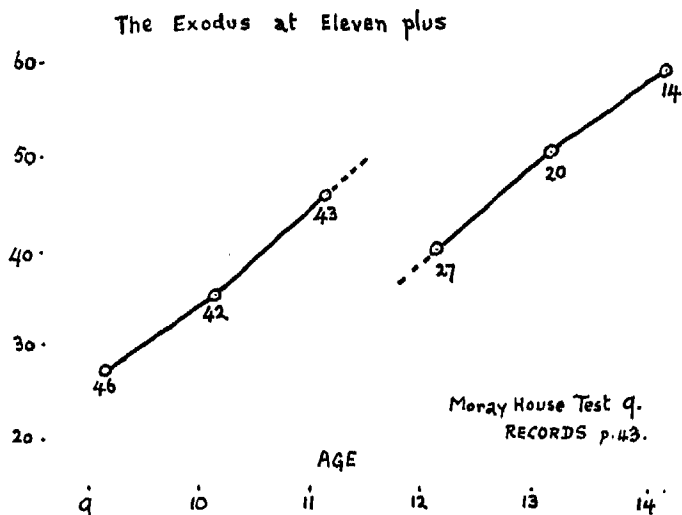


FIG. 2.

A Line of Scores in an Elementary School, showing the effect of the exodus at eleven-plus.

III.—(d) THE EXODUS AT ELEVEN-PLUS.

Where a whole primary school above a certain age is thus submitted to a group test, the result of the exodus of the cleverer children at the age of eleven-plus to secondary and selective central schools is shown in a very marked manner, *vide* Figure 2. The line of norms representing the average performance of each year-group is seen rising regularly, until a sudden break occurs, when it sinks to a lower level, but thereafter rises roughly parallel to its former course. The number of pupils represented by each dot is shown in the figure, which is typical of a large number.

A similar phenomenon can be seen in Figure 8, where, however, there is the complication that the school in question receives, after eleven or twelve, the dull "tops" of certain other schools. In Figure 2 the line after eleven represents an I.Q. of 93, or thereabouts, on the known norms of the test there used, (Moray House Test 9.)

IV.—OTHER METHODS OF STANDARDIZATION.

Because of the selection-difficulty and other practical difficulties, including questions of expense and secrecy, additional ways of standardising a group test are desirable, and four of these may be mentioned.

(a) The standardization may be effected, if a complete, numerous, and uncreamed year-group is tested, by taking each month of birth separately, finding for each the average score, fitting a straight line to the zig-zag thus formed (*see e.g.*, line *AB* in Figure 5) and producing this line in both directions. Indeed, this procedure must *always* be carried out in addition to any other method adopted, since, if the group is really uncreamed and complete, it will give the correct age-allowance for that group. It is a comparison of such monthly lines of norms with annual lines of norms made from a wider age range which leads to the questions discussed below in Section VIII.

Instead of monthly means, medians may, of course, be employed. It is not safe to fit the straight line to the zigzag by eye, but the method of least squares must be used (as explained in Appendix I) or, if the correlation between age and score is needed for other reasons the regression line may be used instead and is indeed identical. Care must be taken to choose the correct regression line (*see* Appendix II).

(b) If a number of children (100 if possible) are available who have within six months been given a careful Binet test, the new group test can be standardized on them, using their Binet *mental* ages as abscissae and their group test scores as ordinates. These points will not, of course, form a straight line, and the simplest plan here for obtaining an at any rate good line is to take the children in groups of five in ascending mental age, and plot their average group test scores against their average Binet ages. It is, however, seldom that a sufficient number of freshly Binet-tested children is available.

(c) The simplest method of all, if a group test has to be standardized quickly, is to compare it directly with an existing and trustworthy group test. Simply walk into a classroom with a bundle of each test and give them out alternately as the children sit. It is pretty certain that the

two halves of the class are comparable, and the average score in the new test can be equated to the average score in the old. Two such classes, chosen rather far apart in age or in ability, give two points which enable the new line of norms to be drawn. If the equation of the straight line portion of the norms of the old test is (a being age and s score) :

$$a = ms_1 + n$$

where m and n are known, and for the new test

$$a = xs_2 + y$$

where x and y are unknown, we have (assuming the equality in average mental age of the two halves of the class)

$$ms_1 + n = xs_2 + y$$

and from two such equations (two classes) x and y can be calculated. If need be indeed a tentative line of norms can be got from one class by equating the quartiles or the standard deviation points as well as the means. This plan, with two classes, always forms one of the first steps in our Edinburgh routine of standardizing a new test.

(d) Lastly, it is possible to deduce the line of norms from the scores of a year-group and a knowledge of the proper scatter of intelligence-quotients. Suppose for example that we know that, in the general population of children, 7 per cent possess an intelligence-quotient of 120 or more, we can arrange our line of norms so as to give this degree of scatter. Find first of all, in the data of our year-group, the average age (say a , measured in months) and the average score (say s_1). This gives one equation

$$a = xs_1 + y$$

for the two constants x and y . Find also the particular score s_2 which cuts off the top 7 per cent of the candidates. This corresponds to an I.Q. of 120 and therefore to an age $1.2a$, so that we have as second equation

$$1.2a = xs_2 + y$$

and hence can find x and y and the straight line equation of the middle part of our line of norms.

This procedure formed for a while one of our routine calculations, and this it was which led to the discovery that the actual monthly line of norms (like AB in Figure 5) is always less steep than the line given by the seven per cent rule, so that the latter, though it gives the "correct" dispersion of I.Q.'s, gives the wrong age allowances. But what, one may ask, is actually the correct dispersion of I.Q.'s?

V.—THE STANDARD DEVIATION OF BINET I.Q.'s.

My original impression, from my own early work in giving intelligence tests, was that about 5 per cent of children had I.Q.'s of 120 and over.

It is true that of the 2,710 cases in the Northumberland first test, the proportion was 11·8 per cent, but this I attributed to the number of special candidates for scholarships, for that group of 2,710 was not a whole year-group. Later I realized that 5 per cent was too small a proportion, and adopted 6 per cent, because of Terman's distribution of I.Q.'s in his thousand Californian children on whom the Stanford Binet tests were standardized. Those thousand children (it is not exactly 1,000 but I have not the number by me) gave, as can be calculated from the data in Terman's book, a standard deviation of I.Q. of almost exactly thirteen, which corresponds to 6 per cent. at and over 120 I.Q. In passing, it will be a convenient to give here, for the use of other workers in this province, a table showing the proportion of candidates (assuming normal distribution) above and below certain I.Q.'s, corresponding to different standard deviations of I.Q. (*see* Table II).

TABLE II.

STANDARD DEVIATION OF I.Q.

| <i>At and over.</i> | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | <i>Below.</i> |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
| 110 | 22 | 24 | 25 | 27 | 28 | 29 | 30 | 31 | 32 | 32 | 33 | 34 | 34 | 90 |
| 115 | 13 | 14 | 16 | 17 | 19 | 20 | 21 | 23 | 24 | 25 | 26 | 27 | 27 | 85 |
| 120 | 6·1 | 7·6 | 9·2 | 11 | 12 | 13 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 80 |
| 125 | 2·7 | 3·8 | 4·8 | 6·0 | 7·1 | 8·2 | 9·5 | 11 | 12 | 13 | 14 | 15 | 16 | 75 |
| 130 | 1·1 | 1·6 | 2·3 | 3·0 | 3·8 | 4·7 | 5·7 | 6·7 | 7·6 | 8·5 | 9·6 | 11 | 11 | 70 |
| 135 | ·36 | ·62 | 1·0 | 1·5 | 2·0 | 2·6 | 3·3 | 4·0 | 4·8 | 5·6 | 6·4 | 7·2 | 8·1 | 65 |
| 140 | ·11 | ·21 | ·38 | ·62 | ·91 | 1·3 | 1·7 | 2·3 | 2·8 | 3·4 | 4·1 | 4·8 | 5·5 | 60 |
| I.Q. | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | I.Q. |

In the body of the table are the percentages of the total number of candidates who will receive an I.Q. at least as large as that on the left or as least as small as that on the right if the standard deviation of I.Q.'s is that given at the top or bottom.

Soon, however, it became clear that even 6 per cent (or $\sigma=13$) was not enough, or even 7 per cent, but that apparently the σ of I.Q.'s obtained by group tests considerably exceeded thirteen.

It is not easy to get statistical data of the correct distribution of Binet I.Q.'s, for as a rule any group subjected to wholesale Binet testing is a selected group. One can, however, draw conclusions; for example from the recent Mental Defect Report, where Dr. E. O. Lewis describes how he sought out, in six districts numbering each over 100,000 inhabitants,

all the children below 70 I.Q., his final criterion being a Binet test. He found of such children

2.09 per cent in urban,
3.97 per cent in rural districts,

and weighting the urban number by four (since there are four times as many urban as rural children in England) we get an average of 2.46 per cent, which from Table II can be seen to correspond to a standard deviation of I.Q. of slightly over fifteen, exactly 15.2.

Recent remarks of Terman also suggest that he takes the σ of I.Q.'s to be fifteen, e.g., on page 29 of Volume III of *Genetic Studies of Genius*.

I assume, therefore that the most competent authorities on individual Binet tests take σ to be about fifteen, which means that the quartiles are almost exactly I.Q. 90 and I.Q. 110. With group tests, however, I found again and again that a line of norms which gave the correct age allowance gave a standard deviation of I.Q. considerably greater than fifteen.

A glance at Figure 1 will show that this means that the line of norms is flatter than is to be expected from $\sigma=15$. For clearly, the flatter the line of norms is, the more it will spread out the mental ages into which it converts the scores. The question therefore arises, why is the line so flat? Why do not the older children make sufficiently higher scores than the younger?

Now one possible reason has already been referred to—namely, the selection difficulty by reason of which a better sample of eight-year-olds is usually obtained than of nine-year-olds, and so on. For a while I thought this to be the true reason. This concerns standardizing over an age range of several years. But standardization *within* the year-group also gave too flat a line, indeed more often than not a still flatter line. This, I similarly imagined, must be due to differential "creaming," and indeed under ordinary circumstances this is certainly in part the case. This matter of creaming is so important not only in standardizing intelligence tests but in giving age allowances in any examination that it requires a section to itself.

VI.—(a) A DIGRESSION ON "CREAMING."

"Creaming" has been already referred to in Section II. It arises from the practice of admitting under-age children to the examination. These are usually clever children and many of them are successful and pass at once to secondary schools, so that when later their own year-group comes up for regular examination many of the cleverest children are missing: the group has already been "creamed."

This would not, of course, affect the slope of the line of norms, the line of average performance from month to month, if the cream had been removed equally from month to month. But this is not the case; invariably more of the older children of the year-group have been given under-age promotion than of the younger.

This is only natural. There is first of all a stronger tendency for a schoolmaster to present a pupil who is just a month or two under age than one who is eleven months under age. This is a mere matter of fact of which I have in my files abundant confirmation. Secondly, among the under age candidates presented there is a tendency in the examining bodies to give scholarships more freely to those only slightly under age, for they fear that those considerably under age may be physically and socially immature for promotion, and they are probably right.

This second tendency is often given effect to by a manipulation of the age allowances. There are three possibilities regarding age allowances for under age candidates. (1) They may be given the full age allowance to which their youth entitles them. This is hardly ever I think done: and carried to its logical conclusion it would lead to the absurdity of promoting to the secondary school even children of four or five if they were clever enough *for their age*; (2) The age-allowance may cease at age eleven (official—really $10\frac{1}{2}$ on the day of examination) and the under age candidates can only win scholarships if they can do so without any more age allowance than the youngest children who are not under age. This procedure naturally gives an advantage to the children who are not much under age, and is intended to do so for the reason given above. It leads at once to differential “creaming.” (3) A third procedure not often adopted is to limit under age candidates to one year under eleven (this is in fact the usual result even without a rule) and to give the under age candidate the age allowance he would have had were he one year older. This ensures that only very clever under age candidates will win scholarships, and it leads to *even* creaming, not to *differential* creaming, for the younger under age candidates have as good a chance as the older under age candidates. Statistically, therefore, it is preferable; but socially procedure (2) is probably better. Personally I prefer that no under age candidates be admitted at all, which is I think both socially and statistically sound. Eleven is young enough, and a second chance can be given at twelve.

VI.—(b) REPLACING THE CREAM.

Clearly this process of differential creaming, since it takes away more and more of the clever candidates as we go up the months of the year-

group, will lead to too flat a line of norms if the calculations are performed on the creamed group, and will therefore give rise both to an injustice to the younger in the group (who receive an insufficient age allowance), and to the phenomenon of too great a scatter of I.Q.'s if an intelligence test is in question. Clearly the cream ought to be returned before the line of norms is calculated. Table III gives an illustration of the extent of differential creaming in one town, and of one method of returning the cream before calculating norms.

TABLE III.
RECORDS, PAGE 21.

| Official age 11 years and | | | | | | | | | | | | | |
|---------------------------|----------|----------|----------|----|----------|----------|-----------|-----------|----------|----------|----------|-----------|-------------|
| Score in M.H.T. 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | Months. |
| 70-78 | 5 (2) | 4 (2) | 4 (3) | 1 | 1 (1) | 4 (2) | 1 (1) | 1 (1) | 1 (1) | 4 (4) | 4 (4) | 2 (2) | 32 (23) |
| 60-69 | 13 | 10 | 7 | 7 | 12 | 8 | 8 (4) | 8 (8) | 7 (7) | 8 (6) | 7 (4) | 12 (8) | 107 (37) |
| 50-59 | 16 | 13 | 17 | 7 | 12 | 11 | 11 (5) | 13 (7) | 14 | 12 | 14 | 15 | 155 (12) |
| 40-49 | 26 | 11 | 15 | 16 | 5 | 13 | 15 | 13 | 20 | 14 | 13 | 9 | 170 |
| 30-39 | 9 | 15 | 20 | 12 | 7 | 12 | 19 | 11 | 8 | 11 | 12 | 12 | 148 |
| 20-29 | 15 | 19 | 7 | 10 | 11 | 5 | 8 | 11 | 9 | 11 | 6 | 7 | 119 |
| 10-19 | 3 | 7 | 7 | 5 | 4 | 5 | 6 | 8 | 5 | 3 | 2 | 2 | 57 |
| 0-9 | 5 | 5 | 3 | 4 | 2 | 4 | 3 | 6 | 2 | 2 | 1 | 1 | 38 |
| | 92 | 84 | 80 | 62 | 54 | 62 | 71 | 71 | 66 | 65 | 59 | 60 | 826 |
| "Cream" | 2 | 2 | 3 | 0 | 1 | 2 | 5 | 14 | 15 | 10 | 8 | 10 | 72 |

The year-group as tested was formed of 826 pupils. But other 72 pupils of this year-group who also existed were absent from the examination, having gained scholarships a year previously as under-age candidates. They were unevenly spread over the months, as shown, only ten of them coming from the younger, sixty-two of them from the older half of the year-group. They were replaced in the group with hypothetical scores as shown by the numbers in brackets in the upper rows of cells, on the assumption that they would have equalled the best surviving candidates. Thus, the ten missing pupils in the eleven year eleven months group were presumed to have equalled the scores of the ten actual top candidates in that month. This procedure is objective and definite:

and while it cannot be exactly correct, it is probably as near correct as is humanly possible. Some of these missing candidates possibly, indeed probably, would have beaten the best actual candidates. But to guess by how much they might have done so is a refinement which would probably be actually an error. It must be remembered that these successful under-age candidates no doubt did themselves full justice last year, and that some of those unsuccessful as under-age candidates perhaps were unlucky or off colour.

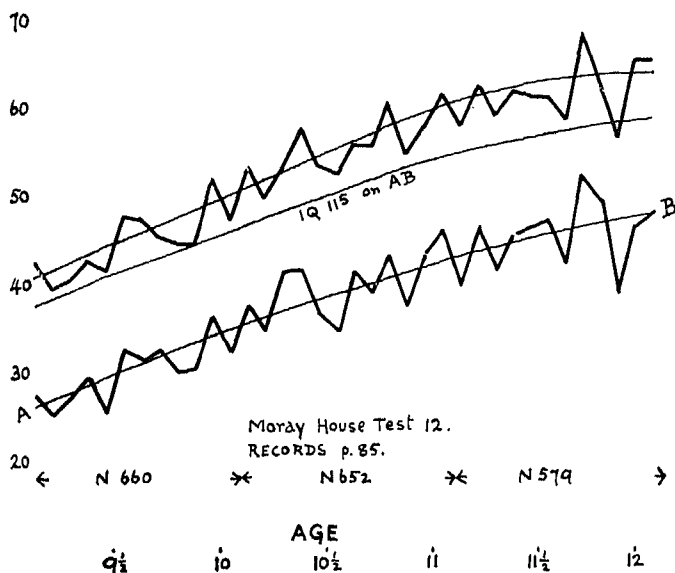


FIG. 3.
Comparing the Upper Standard Deviation with I.Q. 115.
AB is the line of means.

Anyhow, the procedure clearly does something, and not too much, to rectify the line of norms. In the present instance it changes the correlation between age and score within the year-group from

$$r = .059$$

$$\text{to } r = .116.$$

and the equation of the line of norms from

$$s = .293a + 2.9 \quad (a \text{ in months})$$

$$\text{to } s = .60a - 35.5,$$

that is, it changes the age allowance for the average candidate from .3 to .6 marks per month.

VII.—THE STANDARD DEVIATION OF GROUP TEST I.Q.'S IN UNCREAMED GROUPS.

I found, however, that even when lines of norms were made on data to which the "cream" had been thus returned, the results were still that the standard deviation of the I.Q.'s exceeded 15 points by a considerable amount, perhaps even exceeded 20 points.

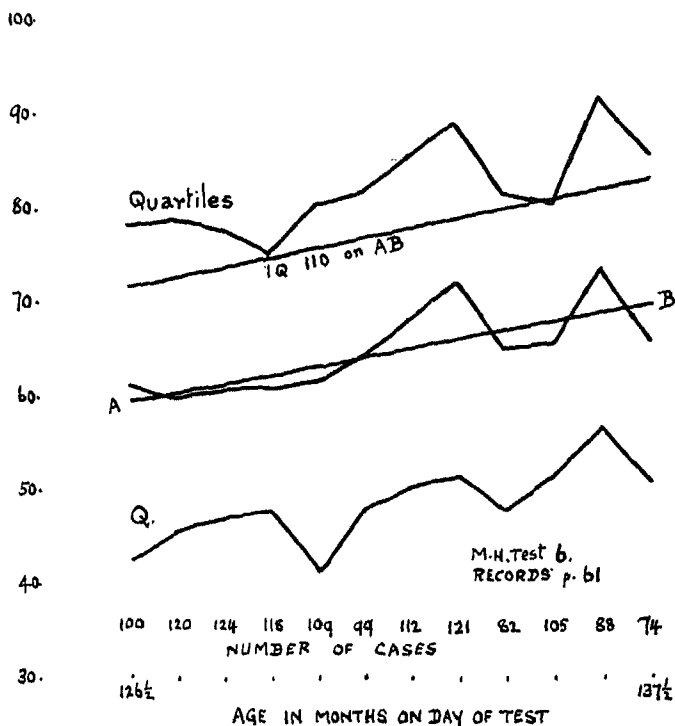


FIG. 4.

Comparing the Upper Quartile Line with I.Q. 110.

The process of restoring the "cream" to a group being one of somewhat questionable accuracy however, I remained doubtful about the phenomenon until I was able to accumulate data *in which no question of creaming arises*, whole year groups with as far as I know no difference whatever in the monthly selection of the candidates. I choose from my record book Figures 3, 4, and 5.

Figure 3 represents one of the best sets of data in my possession. The number concerned is, it is true, not large, being only in all 1,891

children (against some of my tables which run into tens of thousands). But the Director of Education of the town concerned took especial pains to make the group complete. Except for the sick, it contains every child from 9 years 2 months to 12 years 2 months, children of the older months being specially returned from the secondary schools, including those in the secondary school of a neighbouring authority. Very few children, I am assured, are missing through being in private schools, only half a dozen perhaps in each year.

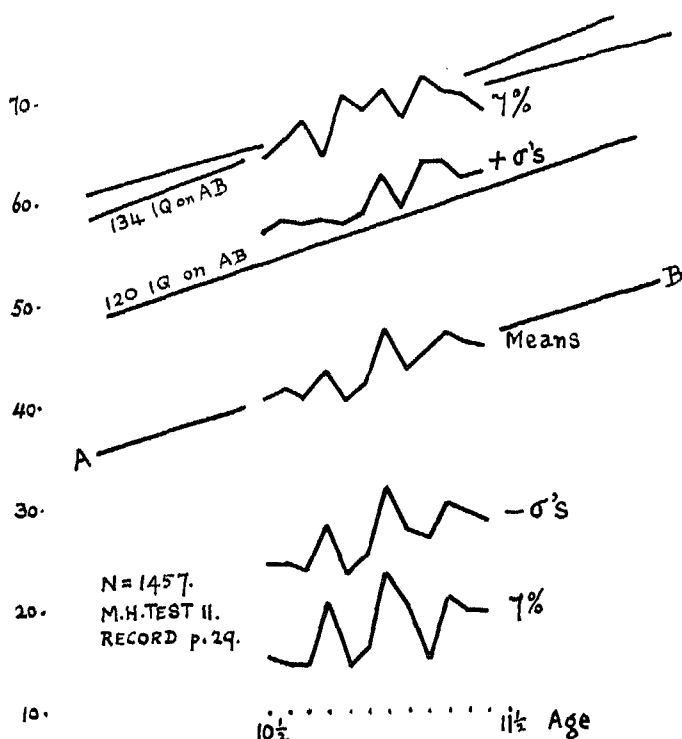


FIG. 5.

A Case where the Standard Deviation exceeds 20 points of I.Q. Showing also that the actual lines of performance diverge less than theoretical I.Q. lines.

For each monthly group of some fifty children the mean score in Moray House Test 12 has been found, and a zigzag drawn to which a curve *AB* has been fitted, by fitting a straight regression line to each of the three years separately, and then smoothing these by hand near their points of junction. Similarly a curve has been fitted to the zigzag of points

which represent the monthly means plus the monthly standard deviations. As will be seen, this curve is considerably beyond the curve for 115 I.Q., based on the line *AB*.

Figure 4 shows the same thing in another town and with another test. And here it is the zigzag of quartiles, which is shown to be considerably beyond the 110 I.Q. line (a sigma of 15 would correspond to a quartile of 110).

Figure 5 in its turn shows the sigma zigzag exceeding even 120 I.Q., and the 7 per cent zigzag far beyond 120 I.Q., at about 134 I.Q. The

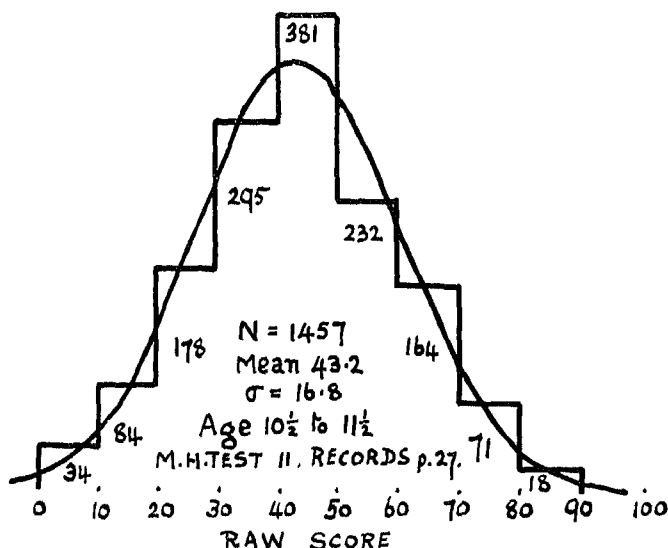


FIG. 6.

The Distribution of Raw Scores in a typical test.

slope of the lines here will be referred to later. Meanwhile, let me re-emphasize the fact that the groups here quoted are *uncreamed* and complete and also that there was no "jamming" of scores either against zero or maximum. The actual distribution of the scores in the town to which Figure 5 refers is given in a histogram in Figure 6, with its best fitting Gauss curve (see Appendix III).

All these sets of data, and many others not here quoted, agree in showing a standard deviation of I.Q. considerably greater than 15, usually about 20.

VIII.—SLOPES OF THE ANNUAL AND THE MONTHLY LINES OF NORMS.

Before accepting this as a fact, however (even as a fact about the Moray House Tests only) I inquired whether the slope of the monthly line of norms obtained within the year groups differed in any way from the slope of a line of norms made by taking annual groups over a wider age range: and I found a certain amount of evidence that monthly norms within the eleven-year-old group are indeed often somewhat flatter than an annual line of norms.

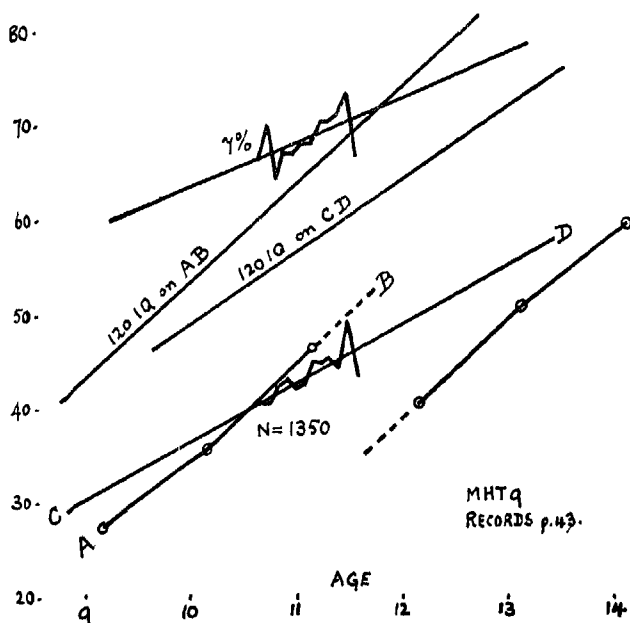


FIG. 7.

Further evidence that the actual Performance Lines diverge less than the I.Q. procedure would expect and that in some cases the monthly Norm CD is flatter than the annual Norm AB.

Figure 7 shows a typical case. Here a background school was tested, and also 1,350 pupils forming the complete, and uncreamed, eleven-year-old group. The background school shows the usual break at eleven (it has already been quoted in Figure 2), but otherwise does not seem to suffer from the selection difficulty. The line *AB* through its nine, ten, and eleven-year-olds, however, is distinctly steeper than the line *CD* which is fitted (as a regression line) to the zigzag of monthly means of the complete group of 1,350. The Figure 7 also shows what a difference in the scatter of I.Q.'s such a change of slope makes, for the 120 I.Q. lines

are shown based on *AB* and on *CD*. The 7 per cent zigzag (which on $\sigma = 13\frac{1}{2}$ ought to be I.Q. 120) is far beyond the 120 line based on *CD*, but not so far beyond that based on *AB*, though still beyond it, and having a lesser slope. The figure certainly suggests that somehow the eleven-year-group is peculiar and gives too flat a line, and most others of my figures support this suspicion.

I also asked a former student of this university, now psychologist for Dumbartonshire, Miss A. Paterson, to examine her records with this

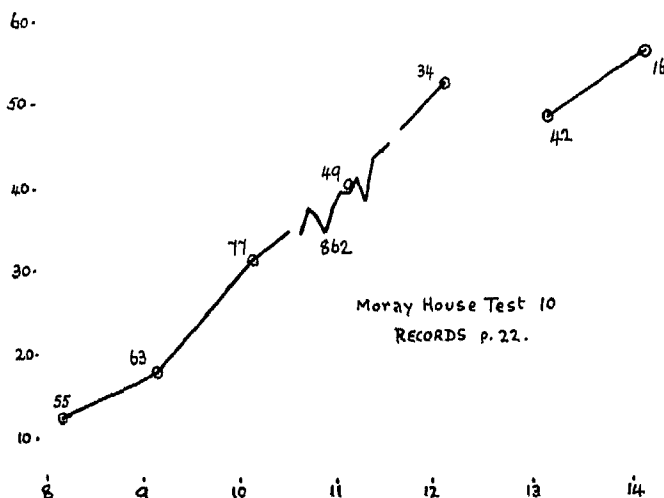


FIG. 8.

Comparing the slope of the monthly Norms from a Year Group of 862 with the annual Norms from the "Background" School.

point in view, and was supplied with two cases where a comparison could be made, both showing a flatter monthly than annual line. The second of these, more free from experimental error than its fellow, gave

$$s = .99a - 74.7 \text{ for the annual}$$

$$s = .83a - 54.2 \text{ for the monthly}$$

line, only a slight difference but in the suspected direction.

On the other hand two of my figures show no such difference, for example the case shown in Figure 8, where the line of the background school has been interrupted to permit the eleven-year-old zigzag to appear. The best line through the latter is a trifle lower than, but practically parallel to, the best line through the former. Also the three years in Figure 3 are practically continuous and do not show the peculiarity spoken of.

The evidence, then, for this second phenomenon, that the line of norms deduced from the eleven-year-olds themselves is less steep than that derived from a wider age range, is not very strong. Nevertheless, it is in my mind stronger than appears in the quantitative records. For I imagine I see traces of two influences very hard to measure. First of all, I suspect that this discrepancy between the lines grows larger as a district becomes accustomed to having an intelligence test; perhaps, that is, as the teachers learn what to look for and how to prepare for such tests. And, secondly, I think it is more marked in districts where in my opinion (for what it is worth) the strain of the examination is more felt, districts where the discipline of the local education authority is strong and the competition for secondary school places "fierce." For if there really is such a difference between the annual and the monthly lines as I suspect, it will be, I think, due to the eleven-year-olds being pressed on for the examination by the teachers, who close up the ranks of the year-group and, not knowing as a rule the *exact* ages of the children, whip up the youngest of the year till they are nearly as good as the oldest. Or, to put the same thing in other words, if the eleven-year group is treated as a unit too much, and individual promotion or individual liberty to study is discouraged, a result such as that suspected would probably arise. Perhaps, in fact, the angle between the monthly and the annual norms may prove to be a measure of the extent to which an examination is exerting an evil influence, leading to coaching classes as a whole and to the suppression of individuality.

That teachers can, and generally do, close up the ranks of a class is seen repeatedly in every statistical survey of a school system. The scatter of educational ages is almost always less than the scatter of mental ages, the clever children being, of course, ahead in school work and the dull behind, but not as far ahead or behind as God's handicap would explain.

I have here been discussing the possible causes of the difference in slope between monthly and annual norms, a phenomenon of which, however, the existence is doubtful. Let us return now to ask again what is, or may be, the reason why these group tests give so large a scatter of I.Q.'s or, what is the same thing, give a line of norms increasing so little from year to year. Of this phenomenon there is no doubt whatever.

It is, of course, possible that the distributions of Binet I.Q.'s hitherto reported have been erroneous and that really intelligence is more widely scattered, from genius to idiot, than had been thought. I hesitate, however, to think this, and prefer to accept for the present the usual fifteen points of standard deviation. It is a matter which I cannot personally check as my own experience of Binet testing is small.

If we accept fifteen as correct, a possible reason which has suggested itself to me for the larger sigma in group tests is the greater dependence upon school work, due in the main to the great amount of reading required in a printed group test. I am not, however, clear how this could have the effect in question, unless the explanation is that schools do not go ahead with intellectual work as quickly as the average child could advance, which does not seem, as a general proposition, true.

The other directions in which I have sought and am seeking for the cause of the phenomenon will be seen from Section X. Meanwhile, let me turn to a discussion of whether at least in the meantime the quotient technique ought not to be given up in group tests: and what could be substituted.

(To be continued.)

(Foreign résumés will be given at the end of the article in the next number.)

BOOK REVIEWS.

Psychology and Psychopathology of School Teachers: By I. G. RAFFIN and H. D. SCHREIDER. Pp. 93. Mospoligraph, Moscow, 1930. 1 rouble. (Published in Russian.)

Revolution, like war, produces its own characteristic forms of psychopathology, and the classes affected are very numerous. In Russia, revolutionary and post-revolutionary changes have profoundly affected the lives and work of school teachers. An attempt at examining the psychopathological reactions is made in this book. It is not confined, however, to psychopathic states directly attributable to the abnormalities of social life in contemporary Russia, but attempts to present a comprehensive analysis of all psychological diseases experienced by school teachers, and to assign the causes.

Of a group of 272 teachers (226 women) apparently chosen at random (the authors are not explicit on this point, but presumably if they were a selected group, they would say so) 229 or 84 per cent were found to be suffering from neuro-psychic diseases, 20 per cent in a mild degree, 42 per cent "medium," and 22 per cent seriously. The absence of any definitions or standards of gravity renders almost valueless the detailed work of classification under headings such as "Neurotic Symptom Complex," "Psychasthenic Syndrome," "Psychoneurotic with hysterical mechanisms," etc., and prevents comparison of the total figures with other similar inquiries (e.g., May Smith and Millais Culpin, Eng. P.O. Workers).

The causes of this state of affairs are of great interest. Bodily ill-health and hereditary taints are predisposing causes in a very high proportion of cases. High as the figures of somatic disorders appear they are not higher than the normal in the post-revolutionary Russia. Hereditary conditions such as alcoholism, syphilis, T.B., and psychopathic tendencies, found to affect 90 per cent of teachers, are far higher than the normal, and this is attributed largely to the fact that about one-third of the teachers are from families of the clergy—notorious for degeneracy and dissolute living.

The material hardships of war and revolutionary years have not borne on the teachers more seriously than on other classes of society, but the change in the type of teaching and the great increase made in the demands on teachers have been very oppressive.

The training of the majority of school teachers has been entirely inadequate: only 9 per cent are classed as having had "higher education" and only 15 per cent any special professional training. In the old days a little mechanical teaching of the three R's and religion were all that were required, and teachers were not embarrassed by their lack of training or of general experience. Now it is the teacher's duty to instruct in a number of other subjects, e.g., natural science and foreign languages, to bring education into close connection with the practical life of the worker and to foster a spirit of inquiry—all with an almost complete lack of books and apparatus, and for several years, even of such essentials as paper and pencils, in abominable conditions of overcrowding, with large classes in small, ill-lit, badly ventilated, under-heated rooms.

The revolution in the religious outlook is also a factor of great importance. Belonging as many teachers did to clerical families, the insistence on "anti-religion" is a cause of the most painful psychological conflict.

There is, too, a burden of routine administrative work and so-called "social work," nominally voluntary overtime, which keeps the teacher occupied with his professional life the whole of his waking time.

What is more there is a tradition of tyranny and inquisition in Russian administration which has not so far changed under the Soviet régime. The teacher lives in mortal terror of the inspector, and is usually subjected to oppressions and indignities by authorities whose sole concern is to exert power. Dr. Raffin reports the case of one teacher who burst into tears on being praised for her work. It was the first time in her life she had experienced any kindness from her superiors. Those who are not completely abject before the authority find life not worth living. They are accused

of being "dishonest, disorderly, bad workers," chivvied about from place to place, sent to the most desolate regions and the worst schools.

The teachers thus find themselves in a most painful position—expected to maintain their authority and prestige with the children—and in the villages in particular to be a centre of cultural life and crusaders for intellectual progress, and at the same time to be mute, humble, and subservient in the last degree under the tyranny and bullying of higher officials.

In addition the loneliness and intellectual isolation of the country teacher, the absence of sexual satisfaction (66 per cent of country teachers have "no sex life") is a contributory cause of breakdown—a few cases of definite sexual abnormality are recorded, but apparently these are very rare.

To disentangle the relative weight of the various causes, ill health, hereditary predisposition, the different sorts of hardships incurred in professional life is very difficult, but the authors claim that in 99 per cent of pathological cases professional life has had a definite effect: in 29 per cent of the cases, however, they find that it has an ameliorating effect on an already existent disorder. For only 14 per cent of cases is professional life held directly responsible; in others it either brings to light a latent condition, or intensifies an already manifest disease.

Other sections of this book deal with reasons for choosing a career and an analysis of satisfaction and dissatisfaction with the work in relation to the reasons for taking it up. A final section gives an account of the application of Jung's Association Tests to this group of teachers, but space does not allow of going into the details of the results.

This work is, of course, of particular interest in that it indirectly throws a good deal of light on sociological conditions in U.S.S.R. It is written "from within" with great frankness and disinterestedness. It is even more important, however, in being among the pioneers efforts on a hitherto strangely neglected subject. The school child has been an object of enormous attention, but the health, well-being, and suitability of the teacher has been of almost no concern to psychologists.

Its methodology and statistical work might indeed be better, but in a work of such qualitative interest we may, perhaps, pardon the omission of Correlation Coefficients and Probable Errors. M.D.S.

The Measurement of Ability in Children: By B. C. WALLIS. (Oxford University Press. Pp. 36. 1931.)

The L.C.C. Chief Examiner has already given us "The Technique of Examining Children" and "Mass Methods of Examination." In this latest pamphlet he gives us the benefit of his further reflections on his job. Unfortunately, he uses a geometrical symbolism that is unfamiliar, difficult, and not apparently at all points consistent: the usual statistical language of frequency surfaces, in n dimensions if necessary, or the mathematical concept of n -dimensional vectors, is simpler. Either of these symbolisms would allow for his points about higgledy-piggledyness, selection of questions and answers and scales of marks, and for the distinction between the two kinds of pass lists: (1) competitive (total of weighted scores); (2) G.S.C. (General School Certificate scheme—passes in each of several papers). He makes a reference to two-dimensional marking which appears to be analogous to Keynes's idea of probability, i.e., any one answer has, e.g., a "what" as well as a "how" value and cannot be assessed simply as a point on a line between completely right and completely wrong: rather it seems this is but a special aspect of the problem of weighting the various qualities in the whole test.

Mr. Wallis as usual stimulates us in the way he is prepared to break lances with his critics, the intelligence tester, the correlation computer, the teacher, the administrator, and the examination investigator. He makes good points in stressing the arbitrary nature of any test and of its components, the difficulty of utilizing the test for any other group of candidates than those for whom it was intended (we should like in this connection to have had his views on the comparability of boys' and girls' results in the same examination). In emphasizing the need for investigation of the "oddities"—the candidates who lie off the regression lines—and the importance of second or even third shots for borderline cases (very interesting this in view

of his wide experience with one-shot authorities) he is on the right lines, and the administrators of examinations should take to heart his advice. But we cannot accept his description of his examination as a "standard yearly examination" "closely related to school purposes" and "giving evidence of results of theory become (possibly stale) practice." Nor will other writers on the principles of measurement probably agree that it is legitimate to employ only certain mathematical operations on their measures. Mr. Wallis says his scores (rankings) are capable of addition and subtraction, but not of multiplication and division: surely it is simply a question that no useful and easily interpreted result has been obtained at present that deters us from performing these latter operations on examination scores.

F.S.

A Handbook of Child Psychology: Edited by CARL MURCHISON. (Clark University Press and Humphrey Milford. Pp. 711. 22s. 6d.)

This book is more than its title suggests, for it is an extensive survey of practically the whole field of the psychology of early childhood, with references to the work of over twelve hundred investigators and writers on the subject; so that the title "Handbook" is unduly modest. It is indeed the most comprehensive volume which has so far appeared on the subject, and is in itself a remarkable testimony to the amount of work which has been done in recent years on the psychology of childhood. It demonstrates too that, as Dr. Murchison points out, the time is gone by when child psychology was thought to be the province either of women or of "men whose experimental masculinity is not of the maximum," even if all will not agree with the editor (though the reviewer does) in thinking that it will soon be recognized by competent psychologists that "one half of the whole field of psychology is involved in the problem of how an infant becomes an adult psychologically."

The volume opens with a long chapter on the methods of child psychology by Professor J. E. Anderson. This is an admirable treatment of the subject, and covers a dozen different modes of approach, from incidental observation and biographical studies, to experiment, questionnaire, case histories, and statistical controls—none of which we can afford to neglect. If I differed at all from Professor Anderson it would be to stress even more than he does the necessity for continuous biographical studies (including within them experiments), but on the whole his summing up of the manifold methods of the present day seems to be excellent.

It is impossible in a brief review even to mention all the other twenty-one topics dealt with by different writers, all of which are useful, and some outstandingly so. "The Conditioning of Children's Emotions," by Mary C. Jones, covers much recent important work, but is perhaps rather a summation of results than a balancing and assessing of arguments and evidence. Susan Isaacs gives an admirable account of her experimental school at Cambridge, and Arnold Gesell of recent important work in the observation of twins by himself and others, which he concludes strengthens the evidence for the "basic role of organic, maturational factors in the cycle of mental growth," as against the dominance of environment. Dr. Gesell, however, protests against the over-simplification of the problem implied in the use of the single terms "nature" and "nurture."

So many dogmatic statements have been made about the effect of being the first, or second, or youngest child in a family, that one welcomes such a survey of the evidence as that given by Harold E. Jones, even if it leaves one chiefly with the impression (not surprising at least to the reviewer) that the existing statistics are conflicting, and point chiefly to the great complexity of the problem and the necessity for taking many items into consideration in the case of any family or child.

A very thorough survey of studies of language development is given by Dorothea McCarthy, confirming among other things the greater precocity of girls in the development of speech, and discussing the influence of imitation and of general intelligence.

Readers who have not kept in touch with recent researches on infant psychology will be astonished at the amount of material in the "Learning Process" summarized and acutely discussed by Joseph Peterson.

Jean Piaget's chapter on "Children's Philosophies" is very brief, but would serve as an excellent introduction to his own important works on the thought of young children.

The contribution on "The Social Behaviour of Young Children," by Charlotte Bühler, is of special value to English and American readers, in that it not only groups together a number of studies from an important point of view, but because it naturally gives a fuller account of German work on child psychology than is done by most of the contributors.

Vernon Jones, in the chapter on "Children's Morals," ranges from enquiries of the percentage frequency of cheating, and the results of various "batteries" of tests of moral qualities, to a discussion of the influences of clubs, churches, and moving pictures.

The numerous studies of children's drawings are dealt with by Florence Goodenough, and among other useful contributions are those on dreams by Dr. Kimmins, the "Gifted Child" by Professor Terman, "Feeble-mindedness" by Professor Pintner, and "Special Gifts and Deficiencies" by Professor Leta Stetter Hollingworth.

I regret that space does not permit to deal with these articles adequately. Enough has been said to show that the volume is an indispensable one for any library of child psychology. C.W.V.

An Essay towards a Philosophy of Education : By CHARLOTTE M. MASON.
(J. M. Dent and Sons, Ltd. Pp. 360. 7s. 6d.)

In this, Miss Mason's last book, she gives a comprehensive view of her philosophy of education. Something is wrong with most of our methods of teaching children, she argues. Why is it that so many of our population lose their intellectual curiosity so early? Why is it that so many lack the marks of educated persons: the capacity for generous impulse, for reasoned patriotism, for seeing beyond the circle of their own interests? Her view is that we have thought too much of education as training, partly due to preoccupation with the old notion of mind as consisting of faculties, and partly to our idea that it can be trained by physical activities, whereas, in reality, knowledge is the sole concern of education proper as distinguished from training, and knowledge is the daily food of the mind. "Thought alone appeals to mind," "thought begets thought," and "all those sensory and muscular activities which are supposed to afford intellectual as well as physical training" should be relegated to their proper places. "The only vital method of education appears to be that children should read worthy books, many worthy books." "Only as he has been and is nourished upon books is a man able to 'live his life.'"

The main principles involved in Miss Mason's theory are that children are persons whose personality must be respected, and not encroached upon by the use of fear, love, suggestion, or influence, or undue play on any one natural desire. It follows that there are but three instruments left us in the education of children: the atmosphere of environment, certain mental and bodily habits, and intellectual and moral as well as physical sustenance. The P.N.E.U. motto is, "Education is an atmosphere, a discipline, a life."

Briefly, the education advocated is mainly humanistic and literary. Children should read copiously, but only books of literary merit. A single reading is recommended, followed by narration of what has been read. This method ensures closely concentrated attention and digestion of the subject-matter read. Since there is no revision, time is saved which can be expended on wide reading. The work is tested by an examination later. It is astonishing, Miss Mason tells us, how with this one attentive reading, children can remember the subject matter months afterwards; their capacities have been greatly underestimated. Miss Mason's method, as everybody knows, has been tried extensively, with very great success. She urges that since it would give a common background of knowledge to children of all classes, its wider adoption would do much to bridge gulfs and to remedy many of our present troubles.

Miss Mason's book suffers to some extent from repetition, but is, for the most part, a delight to read, so vigorous is the style, so illuminating are many of the ideas presented. In reading one feels to be in touch with a rare personality. E.S.

Education: By T. RAYMONT, M.A. (Longmans, Green and Co. Pp. xi, 337. 7s. 6d. net.)

This book is inscribed to the author's old students. They, as well as a wider circle of readers who first made a study of education through the author's book on *Principles*, will welcome the present volume. It does not propose to supersede the earlier work, and the treatment is not intended to be very complete or systematic. Many of the old topics are discussed with that practical wisdom which Mr. Raymont puts before learning as the peculiar contribution to human welfare of those who have borne the burden and heat of the day. No teacher will look in vain for sound practical advice upon such questions as discipline and school curricula. The author's reservations with regard to the utility of definition in education, the functions of the educational theorist, and the value of educational psychology are, perhaps, more cautious than the advances of the last quarter of a century would seem to justify. In such questions the pursuit may be of more value than the actual possession of knowledge. The germinal ideas of education have usually come from writers who followed the practice of the schools with a certain detachment. It is no doubt easy to show the aloofness from practical education of much of the observational work now being done on young children, but he would be a rash prophet who would venture to say that it will not have a decided influence in changing some of the conditions of their education. The study of the way in which minds *do* develop may give no fully valid grounds for prescribing the way in which they *should* be developed, but it is likely to reveal new avenues to development and to throw new light upon the best conditions for their development. Mr. Raymont's general treatment recognises these possibilities, but at times it tends to suggest a sympathy with those who are anxious to obtain the best results from the existing conditions rather than an encouragement to those who are desirous of studying the way in which the conditions themselves may be improved.

W. J. McC.

Problem Tendencies in Children: By Dr. W. C. OLSON, Ph.D. (University of Minnesota Press. Pp. 92+xi. \$2.)

The object of the investigation described in this monograph is to develop techniques for measuring quantitatively personality traits in children, the rapid growth of the Child Guidance Movement in America having created a pressing need for more accurate methods of making such appraisements. Dr. Olson has based his investigation on two rating forms. Schedule A contains a list of overt behaviour problems sometimes found in children, such as cheating, temper outbursts, and bullying, and the teacher is asked to state how frequently she has observed such behaviour in the child under investigation. In Schedule B the teacher is asked to rate each child on certain behaviour traits which do not necessarily denote problem tendencies. The questions are designed to discover the child's attitude to school work, his reactions to his school fellows, and his general character traits.

From the results of the application of both schedules to a very large number of children an attempt is made to discover statistically the relationship between overt behaviour problems and general behaviour tendencies. The value of this research lies in the aid it gives to teachers and clinical workers in identifying those children who are likely to become problem cases, but who have not as yet exhibited serious maladjusted behaviour.

A. M. D.

General Psychology for Professional Students: By GILLILAND, MORGAN AND STEVENS. (Heath and Co. and G. G. Harrap. Pp. 439. 7s. 6d.)

The three authors, though holding different points of view in psychology, have succeeded in presenting a harmonious introduction to the subject. No attempt has been made to discuss controversial topics, so that the reader is not bewildered by critical analyses of alternative explanations; at the same time, there is a danger that he may regard the statements of the authors as expressions of established truths. The illustrations from industrial and professional life are well chosen and add to the value of a book which should appeal to those who require a general introduction to psychology.

A. E. C.

An Outline of Modern Knowledge: edited by DR. WILLIAM ROSE. (Victor Gollancz, Ltd. Pp. 1103. 8s. 6d.)

This book has already been widely recommended for the general reader, but it is our pleasure to recommend it strongly also for the student's library. Of special interest to readers of this journal will be the comprehensive study of the development of psychology by Dr. Aveling, and the very clear exposition of the rise and present position of psycho-analysis by Professor J. C. Flugel. Both the general science of psychology and the particular movement entitled "psycho-analysis" are here put in an historical setting which is concluded with an exposition of present-day ideas. This style of approach, relatively rare at the present day, is particularly welcome.

There are in the volume other articles of great interest to the psychologist and educationist as bearing very closely upon his special study. Professor Wolf's analysis of recent contemporary philosophy, for example, though he deals sometimes with the work of an important writer in only one or two pages, will be a valuable guide to further study, and a stimulus to philosophical appetite. The sociological aspect of education also finds relevant and closely associated topics in such articles as that on "Biology and Human Progress," by Professor J. Arthur Thomson, and the "Beginnings of Morals and Culture," by Dr. R. R. Marett. Taken as a whole the book is a marvellous compendium of many of the most important branches of modern knowledge.

Adolescent Education: FREDERICK ELMER BOLTON. (Pp. xv+506. 12s. 6d. net. Macmillan and Co.)

The author has made a highly comprehensive review of conditions, physical, physiological, and mental, affecting adolescence. In the 500 pages of his book there is an astonishingly large amount of material, which has been suitably and agreeably handled so as to lead through the discussion of many important psychological considerations to the final chapter on Character Education. The mental life of young people, and in particular, the development of imitation and imagination are discussed in relation to attitudes, emotions, and intelligence. The part that can be played by the secondary school is strongly stressed. The work makes a plea for the widest means of liberal culture, for higher ideals to be in mind at the time when it is possible to set the ethical standards, and for the purity of these standards in the home. Although the book is worthy of general commendation it may be brought to the notice particularly of those who are interested in the questions of crime among young people. Morality is human and not merely national, and so the American atmosphere will not hinder an Englishman's profit in the reading.

A.P.B.

Groundwork of Educational Psychology: By JAMES S. ROSS. (London, G. G. Harrap and Co., Ltd. Pp. 276. 5s.)

The Vice-Principal of Westminster Training College has written this very useful book particularly for those undergoing a professional course of training for teachers. There is nothing new in the book; the basis is frankly the psychology of McDougall and the educational theory of Nunn. But the selection of topics, the general sanity of treatment and the practical applications suggested all give evidence of the careful thought and adaptability of the author. The book will be widely used, and, withal, it is cheap.

Curriculum for Pupils of Twelve to Fifteen Years. (Advanced Division.) (University of London Press, 1931. Pp. xvii+343. 5s.) And in thirteen separate parts at 6d. each.

This important publication is the work of the Scottish Council for Research in Education. The Council appointed panels of experts in various subjects suitable for post-primary schools for pupils of twelve to fifteen years of age, and this volume

consists chiefly of these special reports, which are reviewed in detail below by specialists in the respective subjects. In addition there is an introduction which briefly discusses the general problem, including as a relevant topic an analysis of the occupations of the population in Scotland but stressing the importance of interest. There follows also a reprint of Dr. P. B. Ballard's paper on "The Psychological Aspect of the Break at Eleven Years of Age." The whole volume is a valuable contribution to the new problems which are arising in connection with the possible development of senior schools.

History.

The history report of the Scottish Council for Research in Education is comprehensive; it treats of method and matter. Like the report of the Board of Education it gives to history a wide interpretation, the study of the main changes and movements in the development of Western civilization, and maintains its place in the curriculum of the senior school as a preparation for the business of intelligent living. It rightly stresses the importance of selection, recommending as a guiding principle "significance for the present." On this basis a three-year course is drawn up, the third year being devoted to the "last 150 years." It recommends emphasis on the social and economic aspect of history, deprecates the separation of local history and civics, advocates a judicious use of the biographical method, time-pegs, individual and group work through the medium of debates, lecturettes by pupils, keeping of scrap books, visits to places of historical interest, a well-stocked history room and library—in short, all the materials long recognized as essential to his craft by the good history teacher.

Criticism might suggest that while selection is recommended too much is attempted, particularly in the third year. Is it possible to cover in one year with children of 15 years the religious, agricultural, industrial, and political revolutions together with the movements of nationalism, internationalism, imperialism (European as well as British) in pre- and post-war Europe, Asia, and America? The aim is too ambitious; the selection too exhaustive. S.W.

English.

The authors of this report (written primarily with Scottish schools in view) rightly point out that one of the chief difficulties which confronts teachers of English is their uncertainty regarding what they are called upon to teach. The almost unlimited possibilities suggested by the word "English" too often result on the part of the teacher in vagueness of aim, and a haphazard—therefore necessarily incoherent—selection of subject-matter to be taught. The disastrous result is apparent in pupils who leave school unable to use their own language for any of its ordinary purposes even tolerably well. A welcome attempt is here made to dissipate that vagueness by defining very strictly the ends at which intelligent and practical English teaching should aim. English, as a school subject, is considered under two main headings: Composition and Reading, and the necessary dependence of the two is soundly brought out. Reading matter for both home and school is suggested, and specific exercises outlined to give point to the general principles it is desired to enforce.

Although one may dissent in a few minor details from some of the suggestions made it is safe to say that a class of average ability working for the required three years on the lines indicated, and under the adequately equipped teacher presumed by the report, should emerge at the age of fifteen with some solid training in clear thinking, intelligent reading, and the competent management of the English language. There are five useful appendices. That on Speech Training is of particular application to Scotland, but here, as in the rest of the report, the matter is valuable to all teachers of English. F.M.B.

Geography.

A statement of the aims, intellectual, economic, and recreational, and the content of the subject in the advanced division, are followed by the outline of a three-year scheme, the first year's work of which is considered in detail.

A very interesting feature is the recognition of the importance of the study of local geography in establishing facts of human reactions and responses to the

physical environment. The home region is recognized as the "laboratory of direct observation." To this end detailed suggestions for the treatment of a local area, with special reference to a definite region, are made, although it is recognized that the method of approach will vary with the locality and with the interests of the children. The importance of O.S. maps in connection with this work might have received greater emphasis.

From the home region the study is extended to the homeland, Scotland, where interesting regional contrasts are offered. A simple economic treatment of the rest of the British Isles and North America (the latter based on early exploration) completes the first year's work. It is realized that throughout the course the British Isles will demand special consideration, in relation to the activities of people in other parts of the world. In addition, although "the study of the effect of relief as it at present exists is more important than the study of the denuding and upbuilding processes," yet perhaps it is not too much to expect that the later stages of post-primary geography should offer some opportunity for the consideration of the links between past and present geographies and their relation to present-day economic conditions in the homeland.

Europe, South America, and Africa are allotted for study in the second year; Asia and Australasia in the third.

Suggestions for their treatment is given on broad lines only.

Considerable variety of method is indicated, and the use of statistics and year books encouraged.

With careful treatment this should prove an interesting and stimulating course.
E.F.

Languages.

This pamphlet gives, in concise, practical form, the conclusions of a representative panel of Scottish teachers of modern languages. It sets forth clearly and definitely the principles which should underlie the teaching of a modern foreign language to pupils in the advanced division of a school. It stresses, rightly, the need for selection of pupils for and a basic minimum of accurate grammatical knowledge, founded on comprehension of the elementary terms of English grammar. It points out the opportunity, in such a course, for freer treatment of the subject than is usually possible in a secondary school. While recognizing the importance of the reading course, surely the core of any such curriculum, the pamphlet is somewhat vague as to its development. In its assumption of a normal allowance of seven lessons per week, and of classes of not more than thirty pupils, it tends possibly to undue optimism.

In the main, however, in the importance it attaches to competent teachers, to the need for a choice of language in different districts, in the outline grammar syllabus for French, German, and Spanish which emphasizes the elimination of non-essentials, it is sound and helpful and it is to be recommended to all whose business it is to organize such courses.
E.W.T.

Mathematics.

The article is in a sense a syllabus but it is not detailed, and is rather better described as an outline of guiding principles to be borne in mind by teachers of mathematics to pupils of twelve to fifteen years, so that the study may be kept in its proper relation to the capacities of the scholars and the general work of the school. Although most of the points are already known to teachers, it perhaps does no harm to be reminded how applied arithmetic should arise out of practical occasions and general knowledge; that rough estimating ought to be practised; that approximations and errors should be discussed; and, above all, that weak pupils should be required to cover a less extensive field of study than the more apt. Some pupils delight in the manipulation of factors and formulæ; these may be encouraged, and all should be taught according to their talents. Flexibility should be possible in the employment of a scheme ensuring scope for individual powers; it is unwise to attempt to force taste where capacity simply does not exist.

The panel approves group work as an adjunct to individual efforts. An interesting recommendation concludes with a note on the types of books that should be available in school for the pupils' use and the allotment of time for mathematical study.
A.P.B.

Science (Physical and Biological).

The value of this curriculum depends to a large extent on the use which the individual teacher makes of it. It has been planned on the assumption that a general education is not complete if it does not include some knowledge of natural phenomena and of the applications of scientific principles met with in everyday life, and not on the assumption that the pupils intend to pursue a career in which special knowledge of some branch of science is essential. It can be supplemented by the teacher, and those parts elaborated which have a local interest or which make a special appeal to the type of pupil concerned. The time required is a minimum of six periods a week, of which two should be devoted to biology in the third term of the first year and in all succeeding terms. Physics and chemistry are taught throughout the three years, supplemented in the first term of the first year by elementary astronomy, and in the second term by elementary geology. The aim is to give pupils "a general knowledge of scientific principles and achievements in as wide a field as possible" while granting due recognition to the claims of practical work, and avoiding too much formal and exacting experimental work. F.M.A.

Art and Craftsmanship.

The Curriculum in Art and Craftsmanship for pupils of twelve to fifteen years is based on the assumption that a certain standard of attainment has been reached in the primary school. The object of this admirable course, which should be of great value to pupils, whether they attain later a position of influence in industry or in public life, and without which they may prove a source of danger to the community, is to develop a consciousness of beauty, the habit of acquiring and expressing knowledge in form and colour, and the practice of critical judgment in æsthetic products; to improve construction by inculcating the idea that beauty and fitness for purpose are inseparable.

Pupils of either sex, now often away from contact with nature and ignorant of the design and construction of every-day objects through factory production, will be encouraged by this scheme to devote their leisure time after school life is over to one of the crafts suggested in the curriculum. These crafts, requiring only simple apparatus and commenced while at school, should develop initiative, inventiveness, and resourcefulness and compensate in some measure for the lack of knowledge of crafts formerly carried on in the home. W.E.C.

Music.

It is gratifying to find in an official publication the opinion expressed: "Music . . . to be a real educational factor . . . must not be regarded as a purely recreational subject." It is still better to find the opinion practically translated: "Music must be placed on a level with other subjects" in regard to the time expended on the subject, the conditions under which it is taught, and the specialist qualifications of the teacher. But the curriculum regards music as being a training of the ear in the service of the voice to an extent commonly accepted by the educational world but regretted by musicians. The "average pupil of approximately twelve years of age" should have, besides the ear training experience and theoretical knowledge here expected, a knowledge of simple form. The development of this knowledge and the complementary teaching involved needs—and does not get in this curriculum—detailed and careful attention. To think that "several lessons a term should be devoted to listening to music other than choral . . . *with the teacher's explanation of the same*" will benefit children musically is not to have an intelligent conception of "music as a real educational factor in life." D.W.S.

Physical Education.

This publication on physical education is comprehensive, and if carried into effect would ensure that balance in school life between mental and physical activities which is essential to the growing child. To quote from the introductory remarks in the pamphlet: "Any system of education which divorces the physical from the intellectual or moral side of human life is defective and unsound."

The scope of physical education is wide and the authors lay stress on this fact. Physical education does not consist of formal gymnastics only, and time, therefore, should be allowed for other branches of this subject. Those other branches suggested

in this book are (1) the provision of a healthy school environment; (2) the practice of dancing, games, athletics, and swimming, etc.; (3) the instruction in personal and community hygiene; (4) the inculcation of ideals of physical efficiency. The two latter are those, perhaps, which may be difficult to put into practice, owing to the demands on the school time-table of other subjects, but which are really necessary if the practical side is to have an effect lasting over school age.

The paragraph on gymnasia and their equipment is excellent.

The authors finish with remarks on the physically subnormal child and possible treatment for such by the establishment of remedial gymnastic centres, together with a close co-operation between the Physical Training Department and the School Medical Service. An essential factor if the health of every child is to benefit.

Altogether this pamphlet should do much to help future generations in the knowledge of health. May it have all the success it deserves. M.E.H.

Technical Subjects.

The section devoted to technical subjects represents the considered judgment of a very competent panel of investigators. The course includes handwork, technical drawing, and mechanics. Useful suggested schemes in these subjects are given for each of the three years, and recommendations are made regarding the division of time allowed for the technical section among the three subjects. The schemes of work are carefully chosen to appeal to the interests of the boys, a wide liberty of choice is to be left to the individual instructor, and judicious use of the project method is encouraged. E.C.C.

Der Ursprung der Pädagogik (II Teil der allgemeinen Erziehungswissenschaft): By PETER PETERSEN. (Walter de Gruyter and Co., Berlin and Leipzig, 1931. Pp. 216. 7 marks.)

This is the second volume of three, the last of which is as yet only planned. The first was concerned with the "fundamental ideas of community and society, individuality and personality, nature and culture," and inquired to what extent the state, the church, the common people, the economic environment exercise praiseworthy educational influences upon the rising generation. One of the conclusions of this first volume was that education ought to be controlled by the people themselves and that the people's representatives in this control are the family and the "guild" of teachers. I suppose this means that the church and the state are to have nothing to do with it, and that all schools are, like Professor Petersen's own little experimental school in Jena, to be run by a parents' association in conjunction with the teaching staff, a conclusion which certainly frees us from the strait waistcoat of state control, but also opens the door to all the abuses of the private school. It is obviously an ideal which is out of line with the current of actual educational progress to-day. However, that is the first volume, not the present one, which sets out to answer the question, "How can these two (the parent and the teacher) set about the practical business of educating?" I think the ordinary reader will often wonder when exactly he is going to arrive at the practical advice on just what he is to do. At least I know that I feel, in reading the early chapters of the book, what I feel in reading nearly all theoretical and philosophical works on education—a certain impatience with their abstract character. If it wasn't that I know something of what Petersen actually does do in his own school at Jena, I should throw aside this book in a fit of irritation. But we have to remember that Petersen has been, and is, a practising schoolmaster—he was, even before he went to Jena, one of the leaders of the free experimental schools of Hamburg and one of the most successful in putting the new principles of freedom into action without leading to failure and reaction.

The book has two main parts, one on the "metaphysical" and the other on the practical questions of the science of education. It will perhaps illustrate its nature best if I describe a fragment of each. Section 5 of the "metaphysical" part, for example, deals with the "fundamental judgments of the science of education" under six heads. Let us take for nearer study the first heading, *Immer alles!* "Always the whole stream of spirit-life runs through the universe. In no

epoch of the history of the universe has its energy been larger or smaller. . . . The newest theory of heredity teaches that no jot or tittle can be either added to or taken from human inheritance ; and even the upholders of the mutation theory admit that thousands of years are needed, and that even then the original energy remains unaltered, only its form being changed." Now this is not science, and I hope it is not philosophy ; it is mere verbal assertion. Yet this "fundamental judgment," our author goes on to say, "has immense significance both for scientific research and for practical behaviour." It is perhaps true, *if rough enough measures are used*, to say that "mankind always stands before the same problems, armed with the same talents." But if this means that, for example, the Greeks of the fifth century B.C., and the Spaniards of the nineteenth century A.D., possessed the same amount of intelligence, talent, and genius then it is almost demonstrably untrue, and is certainly very improbable. I quite agree with some of Petersen's *conclusions* in this section : as that, for instance, the study of past literatures and dead civilizations is not the only way, or even for most of us the best way, of arriving at culture ourselves. As he says, the sun which shone on Homer still shines on us, and some of us can learn as much or more from the sun and from nature and from our contemporary life and its problems as we can from Homer. But it wouldn't occur to me to deduce that from a "fundamental judgment ;" and I think the fundamental judgment arrogant, and the deduction invalid, even although I find the conclusion reasonable.

The reader will have gathered that I don't like Professor Petersen's "meta-physical" side (why "metaphysical ?" It seems to me to be merely "mystical"). But let us turn to his practical side.

Here we have the successful schoolmaster, and almost every page is worth quoting. For example : "If we can let the children grow and mature in peace, under the fostering care of true educators, in school communities and educational homes, *protected bodily and spiritually from the harmful influences of our adult culture*, it will then follow as a matter of course that they will, during these years, analyse for themselves and come to an understanding of what family, state, church, fatherland signify, and that they will present themselves as valuable and freely developed young recruits to these institutions in quite another and better sense than is to-day possible, where these social organizations with their early demands overpower, as it were, the child and the youth and destroy their free development. Therefore, every school must become an educational community of *all* the children of a people. Therefore, also, it must be as independent as possible of the economic environment, of the state, and of the church, so that purely spiritual influences and purely human demands and associations can have their strongest possible effect."

I would not advise anyone to begin reading Petersen with this book. But for those who are already acquainted with his more practical works (his "Jena-Plan" and his magazine articles) it is of great interest. It is strange that, in it, Petersen should so rail against verbalism, so praise *doing* as against mere speaking and writing, when his own education and his own powers are so predominantly linguistic. His mother tongue was a Schleswig dialect, he speaks Danish as perfectly as German, English admirably, French excellently, and, I believe, Spanish also.

I hope I may have stimulated, or provoked, an interest in Petersen in some English circles, for he is well worth reading and studying. G.H.T.

La Rédaction chez les Petits : By MARIE FARGUES. (Les éditions du Cerf. Pp. 165. 10 francs.)

This book is a study of a number of composition lessons given to classes of children aged 8-10 years. The classes were small, numbering from 12-25, and the setting is that of a country school.

In France, more attention is paid to style than to abundance and originality of ideas, and the teaching is in accordance with this. The schools tend to emphasize the formal element in composition ; and even this book, which rejects the text-book and the ordinary *lecture expliquée*, and claims to have found a method of imparting a living interest to the subject, seems to us to err on the side of formality.

Lessons on composition for children of eight start with the single sentence. For a time the child should write one sentence, and only one, on a topic suggested to

him. He should write neatly and be encouraged to take great pains over the work. In time he arrives at describing in two or three sentences something which he has noticed on his way to school, or some simple experiment conducted before his eyes in class. At a much later stage he may arrive at the composition of a short play based on a story that has been thoroughly prepared.

One interesting suggestion, unfortunately applicable only to a small class, is that children should work in pairs and write a co-operative composition on the blackboard. Another device, fairly often used in England, is the correlation of drawing and composition. The children are asked to illustrate a poem containing metaphors, and their drawings show if the language has been understood; or they are asked to make a drawing themselves and then write a few sentences describing what they have drawn.

The compositions given to illustrate the success of the method show neat well turned sentences, but, as is to be expected, little flow of ideas. M.S.

Illiteracy in the United States: By SANFORD WINSTON. (The University of North Carolina Press. English Publisher, Humphrey Milford. Pp. 168+xii. 13s. 6d.)

Part I of this work deals with the general problem of illiteracy as it exists in the United States to-day, together with the trend of illiteracy during the last fifty years and a brief summary of the data on illiteracy prior to 1870. Illiteracy at the present time is examined in relation to such factors as sex and age, urban and rural environment, nationality and racial type and educational facilities. Part II examines illiteracy in relation to other social phenomena. There is a good bibliography, an appendix on methodology and another containing supplementary tables. B.C.L.J.

FOREIGN JOURNALS.

ZEITSCHRIFT FÜR PÄDAGOGISCHE PSYCHOLOGIE. Leipzig, December, 1931.
Contains an article by Dr. H. VORWAHL on *The Psychology of Political Youth*.

Political strain in Germany has penetrated to the boys in higher forms. There is increasing complaint about ill-treatment of school-fellows of other political persuasions, also denunciation and *Bestrafung* of suspected masters. A favourable starting point for a political understanding of young people is offered by their inclination towards group-life. For them "we" are the community, the group; "we" have our customs, our conflicts. War has left to a generation that never knew it a transfiguring glory now transferred to youth organizations as a substitute for the army. They are attracted by uniforms, and an appeal to the youthful feeling of self-esteem. There was a hope that old traditions were giving way to a more comradelike treatment of boys, though "Rousslismus" still found doubters. The modern school was establishing some relation of confidence between teacher and taught in contrast to the kind of "character" bred by authority—insolence, hypocrisy, and mistrust. But Parliamentary discussions and school self-government have been inadequate to sublimate these instincts, they break through outside of school hours because the school offers no opportunities for discharge of feelings. Feverishness explodes in recess or some member of the staff may become a lightning conductor for the storm clouds which have heaped up to unbearable oppression. For this phenomenon the psychological notion of "damming-up" has been introduced. Everyone feels the pressure to throw off the bonds of custom and surrender to vulgarity. The misjudgment of the abysmal in mankind which is common to idealist philosophy results in a lack of channels for leading off superfluous energy. There is a *juvenilizing* of political life, a capitulation to the spirit of youth. Hitler goes with the *Jugendbewegung*. Over-estimation of one's own power is characteristic of unripe youth.

THE STANDARDIZATION OF GROUP TESTS AND
THE SCATTER OF INTELLIGENCE QUOTIENTS.

A CONTRIBUTION TO THE THEORY OF EXAMINING.

BY GODFREY H. THOMSON
(*Moray House, University of Edinburgh*).

CONTINUED FROM VOL. II, PART 1.

IX.—*Standard scores.*

X.—“*Headroom,*” and a comparison of intelligence tests with tests of English and arithmetic.

XI.—*On age-allowances in ordinary examinations.*

XII.—*Summing up.*

IX.—STANDARD SCORES.

The advantages of the intelligence quotient are many. It is very widely understood, is universally employed in Binet testing, and does not break down with the cessation of the growth of intelligence until at any rate a later age than that with which we are here concerned, eleven years.

On the other hand the essential thing in the eleven-year examination is to give a correct and just age allowance, and the work described above shows that the line which does this for the average pupil, if used as a line of 100 I.Q., leads to I.Q.'s which, it would seem, differ from Binet I.Q.'s in being much more widely scattered.

What I have myself begun to do, pending some final clearing up of the matter, is to use standard scores centred on 50 (instead of 100) and having a standard deviation of 15 points.

The process will be clear from Figure 9, which represents the scores of 652 children from 123 to 134 months old, about 50 per month. The middle zigzag represents the monthly means, the upper and lower zigzags represent the addition and subtraction of the monthly standard deviations. Instead of means and sigmas, the medians and the 16 per cent lines from top and bottom of the order of merit can be used. To these zigzags straight lines have been fitted by Least Squares (*see Appendix I*) and called standard scores of 65, 50, and 35 respectively. The other lines have been drawn to sympathize with these key lines: but it is also necessary to do what is not shown here, viz., to draw one of the highest

lines independently from a study of the high percentiles in each month, since the age allowance is particularly important for the top candidates. Such a standard score can exceed 100, though only rarely—as rarely as a Binet I.Q. exceeds 150.

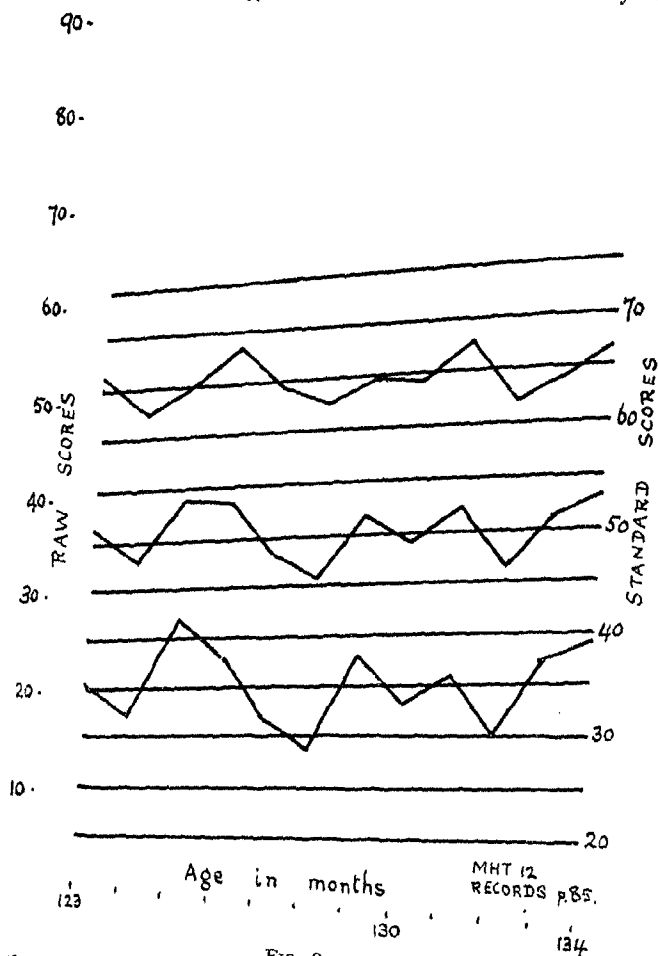


FIG. 9.

Showing the Conversion of Raw Scores into Standard Scores. In practice a high percentile zig-zag (say 93 per cent) is also fitted to check the slope of the topmost lines not here shown.

In actual practice a ready reckoner is used instead of Figure 9, as shown in Table IV, where the "official" ages are used (three months more than the true ages). Find the pupil's age on the left, pass along the row

till his raw score is reached, when his standard score is found at the head or foot of the column. If his raw score falls between two given, a standard score between those at the head of the two columns is interpolated, with the aid of a subsidiary reckoner (a "vernier").

These standard scores make no claim to be I.Q.'s: but for many purposes the standard score, increased by 50, would give an index closely resembling a Binet I.Q., having the same standard deviation. The difference from a true quotient lies in the fact that if we multiply these pseudo-quotients (standard score+50) by the chronological age we do not find, *with the same raw score*, the same mental age for an older boy and for a younger boy.

TABLE IV.

READY RECKONER FOR FINDING STANDARD SCORES.

MORAY HOUSE TEST 12. PAGE 84 RECORDS.

STANDARD SCORES.

| Age. | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 11.5 | 9 | 15 | 21 | 26 | 31 | 37 | 43 | 48 | 54 | 59 | 65 | 71 | 77 | 82 | 88 | 93 |
| 11.4 | 9 | 15 | 20 | 26 | 31 | 36 | 42 | 47 | 53 | 59 | 64 | 70 | 76 | 81 | 87 | 92 |
| 11.3 | 9 | 14 | 20 | 25 | 30 | 36 | 41 | 47 | 53 | 58 | 64 | 69 | 75 | 81 | 86 | 92 |
| | | | | | | | | | | | | | | | | |
| 11.2 | 8 | 14 | 19 | 25 | 30 | 35 | 41 | 46 | 52 | 58 | 63 | 69 | 74 | 80 | 85 | 91 |
| 11.1 | 8 | 14 | 19 | 24 | 29 | 35 | 40 | 46 | 51 | 57 | 62 | 68 | 73 | 79 | 84 | 90 |
| 11.0 | 8 | 13 | 18 | 24 | 29 | 34 | 39 | 45 | 51 | 56 | 61 | 67 | 72 | 78 | 84 | 89 |
| | | | | | | | | | | | | | | | | |
| 10.11 | 7 | 13 | 18 | 23 | 28 | 34 | 39 | 44 | 50 | 55 | 61 | 66 | 72 | 77 | 83 | 88 |
| 10.10 | 7 | 12 | 18 | 23 | 28 | 33 | 38 | 44 | 49 | 55 | 60 | 65 | 71 | 76 | 82 | 87 |
| 10.9 | 7 | 12 | 17 | 22 | 27 | 32 | 38 | 43 | 49 | 54 | 59 | 65 | 70 | 76 | 81 | 86 |
| | | | | | | | | | | | | | | | | |
| 10.8 | 6 | 12 | 17 | 22 | 27 | 32 | 37 | 42 | 48 | 53 | 59 | 64 | 69 | 75 | 80 | 85 |
| 10.7 | 6 | 11 | 16 | 21 | 26 | 31 | 37 | 42 | 47 | 53 | 58 | 63 | 68 | 74 | 79 | 84 |
| 10.6 | 6 | 11 | 16 | 21 | 26 | 31 | 36 | 41 | 47 | 52 | 57 | 62 | 68 | 73 | 78 | 84 |
| | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 |

For example, a boy "A" of age 10·6 (really $123\frac{1}{2}$ months) with raw score 52 has a standard score of 65, a pseudo I.Q. of 115, and a mental age therefore of 142 months, whereas a boy "B" aged $134\frac{1}{2}$ months (11·5 officially) with the same raw score 52 gets a standard score of $58\frac{1}{2}$, and pseudo I.Q. of $108\frac{1}{2}$, which gives him a mental age of 146 months.

The same raw score does not, therefore, lead to the same mental age if the standard scores (plus 50) are treated as though they were I.Q.'s. But they have the same standard deviation as I.Q.'s, and *two boys with the same standard score are equal in ability*, for the age allowance has been most carefully adjusted to be correct and exact.

Standard scores in fact are a device to give perfect age allowance, and to give the same standard deviation as Binet I.Q.'s, while avoiding any claims to be actually quotients in the sense of a mental age divided by a chronological age.

X.—"HEADROOM," AND A COMPARISON OF INTELLIGENCE TESTS WITH TESTS OF ENGLISH AND ARITHMETIC.

There is one conceivable explanation of the flatness of the above mentioned lines of norms which is I think undoubtedly *not* the explanation as far as the 100 I.Q. line goes : is undoubtedly I think *not* the explanation of the resulting surprisingly large scatter of I.Q.'s : but which is nevertheless of interest for other reasons, especially as regards age allowances for the cleverest children. That is the question of "headroom." I mean by headroom, room at the top of the test for the cleverest children to show their powers. A test clearly has insufficient headroom if numbers of children are jammed together near the maximum possible score ; but I shall, I hope, make it clear later that even when this gross fault is avoided there may be an influence of a more subtle kind due to lack of sufficient headroom.

My reasons for thinking that this phenomenon now before our consideration is not the explanation of the problem previously discussed are that in all our tests great care has been taken to obtain a good distribution of the total scores, and for all the figures here quoted a distribution like that already portrayed in Figure 6 could be presented. There, where the maximum possible raw score was 100, it will be seen that out of 1,457 candidates none exceeded 90 points, and only 18 exceeded 80 points. Under these circumstances it seems certain that the average pupil could easily have scored more than he actually did, had his ability been greater. The average score there was 43·2 out of 100 : and if in Figure 5 the line of average scores is scrutinized from month to month, it will be seen that

even the oldest children of the year-group average less than 50 points. There seems no reason whatever to think that they are being kept down by "ceiling" beyond which no one can go. Lack of "headroom" is not the explanation of the phenomena hitherto discussed.

But although the lack of headroom is not the explanation of the flatness of the line of averages (upon which the I.Q. technique depends) it is I have little doubt at least part of the explanation of another phenomenon, namely, that the lines fitted to high score zigzags, such as the 7 per cent zigzag (the 93 percentile that is), are definitely and almost invariably flatter than the quotient lines. For example, in Figure 5, the best fitting line to the 7 per cent zigzag, and also the 134 I.Q. line on A.B., are both shown, and the 134 I.Q. line is definitely too steep and would give too much age allowance to the youngest clever candidates.

Again in Figure 7 it is clear that the quotient lines, whether based on the annual norms *AB* or the monthly norms *CD*, diverge more than do the actual lines fitted to various percentiles of the months.

Not only, therefore, does the quotient technique, based upon the best fitting line to the average monthly scores, give too big a scatter of I.Q.'s, it gives the wrong age-allowance for the best candidates, a matter of the greatest importance. The standard scores described in the previous

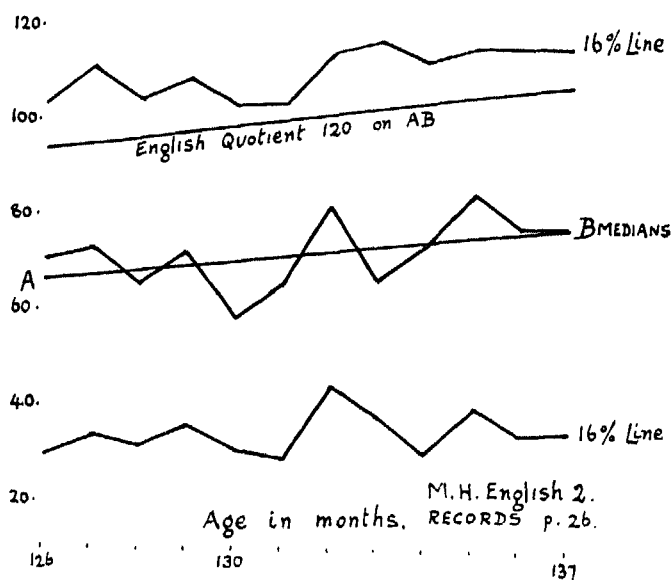


FIG. 10.

The Quotient Procedure applied to a Test in English.

section, are, if one of the fitted lines is a high percentile, *entirely free from this defect.*

The fact seems to be that the "ceiling" or maximum possible score of a test has an influence on the top scores long before they actually begin to attain it. In Figure 7 the 7 per cent zigzag shown is a considerable distance from the "ceiling": but I have little doubt but that its flatness is due to the difficulty the older candidates have in earning more of the difficult top marks. The "ceiling" repels long before it is actually reached.

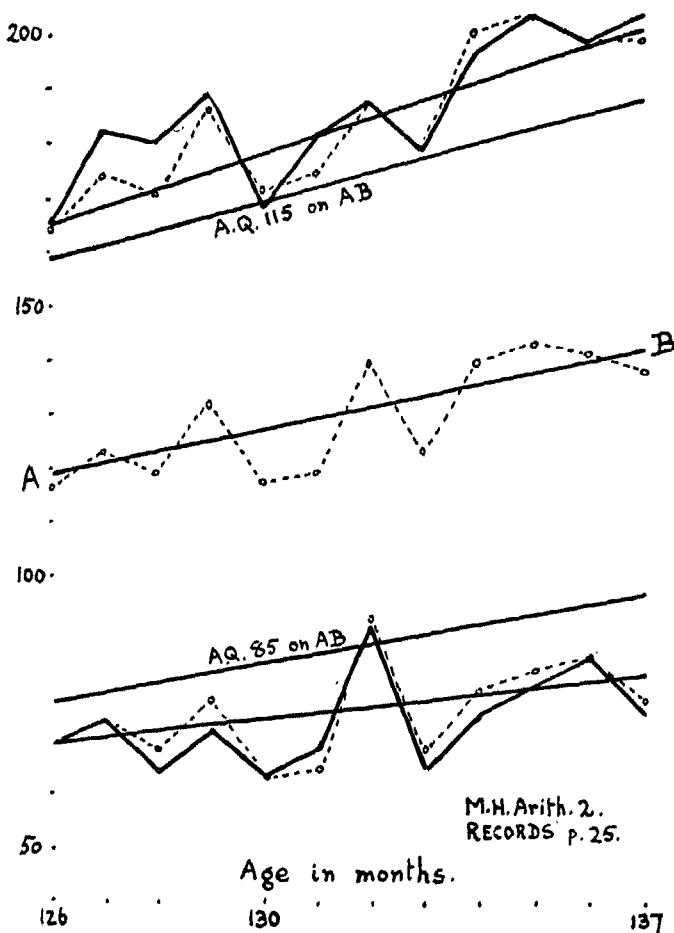


FIG. 11.

Comparing Standard Deviation Lines (dotted), 16 per cent Lines (solid), and Quotient Procedure Lines in an Arithmetic Test.

There are three ways of getting headroom for the best candidates : (1) The time allowed may be short for the number of items offered, so that the best candidates, who are usually the speediest, can always score more. English teachers have, however, an aversion to measuring intelligence by speed. (2) The test can be made "steep" and of steadily increasing difficulty towards the end. It is, however, exactly in such a test that the "ceiling" repels before it is reached. (3) Combined with a reasonable amount of steepness may be an arrangement whereby more marks are given for the difficult items. This is fair only if the test really is a power test and not a speed test, and plenty of time is allowed. Otherwise it might pay a candidate to do the test backwards, beginning at the difficult end.

It is of considerable interest to compare group intelligence tests with tests of English and of arithmetic, in this matter of the divergence or otherwise of the lines representing different levels of performance. In addition to various smaller trials we have now experience, in our Edinburgh laboratory, of two large practical trials of tests resembling Burt's Northumberland tests of English and arithmetic, and Figures 10

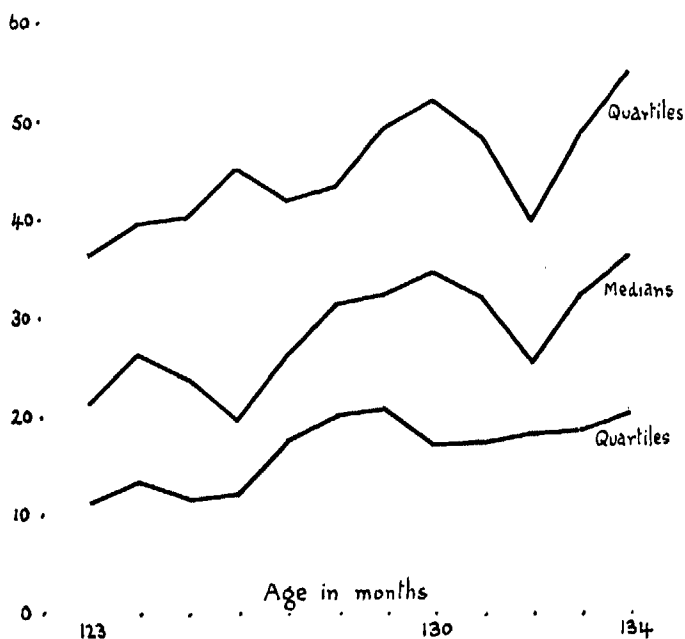


FIG. 12.

An Ordinary Examination Paper in Arithmetic showing little Divergence.

and 11 show some of the results. Figure 10 concerns the English test, and shows the median and the 16 per cent zigzags, i.e., the points which in each month cut off the best and the worst 16 per cent of the candidates, points which ought to coincide with the standard deviation lines in normal distribution. It will be seen that these lines are far beyond an English "quotient" (based on AB) of 120. In Figure 11 the arithmetic test is shown, and here both the sigma lines and the 16 per cent. lines are drawn—they are practically coincident. Here the standard deviation of arithmetical quotients does not by any means exceed 15 points so violently, though it still does exceed it, as will be seen from the figure. It would almost seem that an arithmetic test is a better measure of that intelligence which is measured by a Binet test than is any other type of written examination.

In both these cases, however, the zigzags are more or less parallel to the quotient lines and there is no evidence of any serious lack of headroom.

The phenomenon noticeable in Figures 10 and 11, that there appears to be more growth in a year in arithmetic than in English, is not confined to standardized tests, but is seen in ordinary examinations in these subjects. Figures 12 and 13 show the median and quartile zigzags for ordinary examinations in English and arithmetic in a certain education authority. On fitting the best mathematical line to the medians in these figures, we find that the proper age allowances for the average candidate are, in English 0.32 marks per month, but in arithmetic 1.17 marks per month, and in my experience the necessary age allowance in arithmetic is always, as here, greater than in English.

XI.—ON AGE ALLOWANCES IN ORDINARY EXAMINATIONS.

Ordinary examinations at eleven plus are seldom, if ever, submitted to the scientific statistical examination which is a routine in good testing: but the above-described experiments permit of certain general statements regarding age allowances in such examinations.

In the first place, age allowances are, in the interests of justice, absolutely necessary. Secondly, they cannot be decided *a priori*, but only from a statistical scrutiny of the scores after the examination papers have been marked. In this scrutiny the question whether the group is "creamed" or "uncreamed" must necessarily be considered. If "creamed" some steps must be taken to correct for this. After the statistician has corrected for "creaming," or assured himself that the group is "uncreamed," he should proceed by a method analogous to that used in making Figure 9 and the ready reckoner in Table IV.

In particular there is one method of making age allowances which in my experience is always incorrect, namely, that of giving a candidate a percentage of the marks which he has actually obtained, i.e., giving a clever candidate a larger age allowance than a mediocre candidate. This

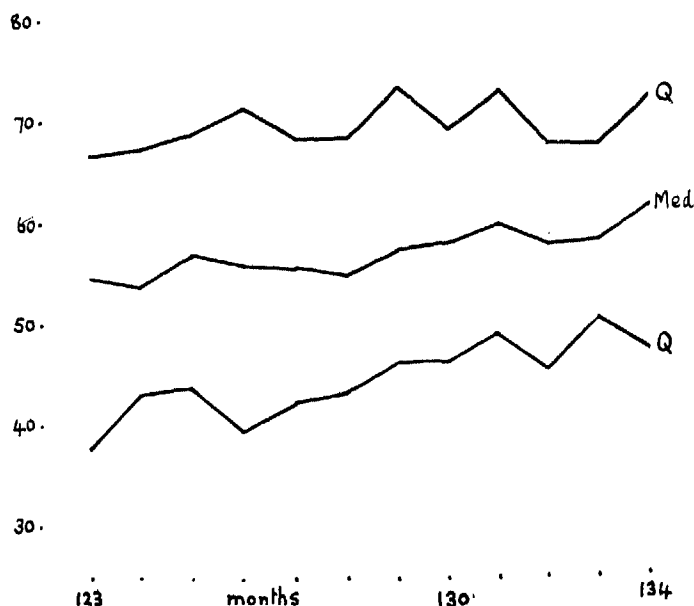


FIG. 13.

An Ordinary Examination Paper in English, showing Convergence instead of Divergence.

assumes (as does the quotient technique) that the lines of performance at different percentiles diverge considerably. Even in standardized tests, it has been shown in this article (in, e.g., Figures 5 and 7) that the actual percentile lines do not diverge as much as this. In ordinary examinations they appear to diverge even less, so that in Figure 12 (an ordinary arithmetic examination) they are only slightly divergent, and in Figure 13 (an ordinary English examination) they are actually convergent. In the latter case especially a percentage age allowance would have been a serious injustice to the older clever candidates, and a flat age allowance would have met the case much better. But the only proper and scientific plan is that of Figure 9, with a high percentile zigzag added for precaution. This gives different age allowances at the different *niveaux*, carefully fitted to the actual statistical facts of the examination.

XII.—SUMMING UP.

It is consistently found that if the I.Q. technique is applied to group tests of intelligence like that shown in Appendix IV the standard deviation of I.Q. exceeds 15 (as illustrated in Figure 3), or even exceeds 20 points (Figure 5). Figure 4, where the quartile I.Q. exceeds 110, shows the same thing in another way, and Figures 10 and 11 include attainments tests in English and arithmetic in the generalization.

Further, there is a tendency for the upper I.Q. lines to be steeper than the actual lines fitted to high percentile zigzags (Figure 5), or in other words for the I.Q. procedure to handicap the older members of the clever stratum of the age-group, even though correct for the normal children. This does not seem to be entirely explicable by lack of "headroom," for there was room at the top (Figure 6).

This phenomenon is complicated by the fact that sometimes, though not invariably, the line of *monthly* norms from an age-group is flatter than the line of *annual* norms from a wider age-range (Figure 7). In such a case, the "background" norms from the wider age-range, though giving a less inflated standard deviation of I.Q., give an incorrect age-allowance even at normal level, and a much more incorrect age-allowance at the upper levels of intelligence. It is suggested that conceivably the angle between the monthly and the annual norms is a measure of the amount of cramming for the test.

The endeavour to attain a compromise between these conflicting difficulties has led the writer to give up the term intelligence quotient for group tests at least temporarily, and to recommend the use of a standard score. This is derived from the data by fitting mathematically to various percentile or other zigzags the best straight lines. It is illustrated in Figure 9, where straight lines are fitted to the zigzag of means, and to the zigzags running one monthly standard deviation above and below. Intermediate lines are then drawn, and adjacent lines extra-polated. To ensure justice at all levels, other zigzags not here shown, as, e.g., a high percentile, should also be fitted, especially in the upper reaches, to complete the process.

Any convenient numbers can be assigned to the standard scores. Here the mean is called 50 and the upper standard deviation (or the 84 percentile) is called 65, so that the resulting standard scores, if 50 be added to them, closely resemble Binet I.Q.'s: but the use of 50 instead of 100 for the central value avoids any appearance of claiming that they are in fact I.Q.'s. They give, however, a practically perfect age allowance at all levels of ability.

APPENDIX I.

ON FITTING LINES OF NORMS BY LEAST SQUARES.

The method of Least Squares can be used to make the sum of the squares of the distances from the points of the observed zigzag to the straight line a minimum in any one of the three following senses: (1) along the ordinates of the figure (*vide*, e.g., Figure 4, line and zigzag AB), (2) along the abscissæ, (3) at right angles to the line. For a geometrical problem no doubt the third solution would be correct, but here it is solution (1) that is needed, since the ordinates are obtained as averages (or medians, quartiles, etc.) of the scores in the test, and the abscissæ are fixed ages. Each dot represents the *average* (or some percentile) score of a number of children all of the *same* age.

We have then to make minimal the quantity $\Sigma(v^2)$ where the v 's are the discrepancies from zero obtained by substituting the n points of the zig-zag in the straight line.

$$y - mx - c = 0$$

The values of m and c which achieve this are then given by the normal equations

$$\begin{aligned} \Sigma(y) - m\Sigma(x) - nc &= 0 \\ \Sigma(xy) - m\Sigma(x^2) - c\Sigma(x) &= 0 \end{aligned}$$

provided the points are of equal weight. If not, then before making the summations each equation must be multiplied by its weight (the number of children concerned).

For non-mathematical readers this process can be made mechanical, for the commonest case where it is a question of fitting a line to a zigzag of twelve monthly values, of approximately equal weight, as follows:

Using odd numbers, number the twelve months from -11 for the youngest up to $+11$ for the oldest and call these numbers x 's.

Choose a convenient central value among the monthly scores s , measure each monthly score from it, and call these values y 's.

Form a third column by multiplying each x by its y , taking care to note the correct sign of the resulting xy .

Find the algebraic sum $\Sigma(xy)$ of the xy column. Then the best fitting straight line of norms is

$$s = \frac{7\Sigma(xy)}{2000}(a - \text{zero age})$$

+ average of the twelve scores.

where s = score

a = age in months

zero age = the central age (in months) of the year group.

NOTE.—If the ages are given as years and completed months, add half a month in all calculations such as this, for centring.

APPENDIX II.

ON CALCULATING r AND THE REGRESSION LINE.

As remarked in the text, if the correlation between age and score has to be calculated in any case (preferably by the method of diagonal adding) the best fitting line is at once given by one of the regression lines, and the only point to note with care is that the proper regression line is taken, for (as explained briefly in the text with references to longer explanations) one of the regression lines is a mere artefact depending on the age range chosen (whether one year, or two, or what not).

The line which is wanted is the line

$$\frac{s - \bar{s}}{\sigma_s} = r_{as} \quad \frac{a - \bar{a}}{\sigma_a}$$

where s is score, \bar{s} is grand average score, σ_s is standard deviation of all the scores of the year (or years) as a group, and similarly for a =age in months.

APPENDIX III.

ON DRAWING A NORMAL CURVE (AS IN FIGURE 6) TO FIT A DISTRIBUTION OF SCORES.

The following table (first two columns) enables this to be done. It is a brief extract from Sheppard's Tables. The remaining columns show how the calculations are carried out in the case of Figure 6, as illustration.

| | Sheppard's z | $y = \frac{1457 \times 10}{16 \cdot 8} z$ | Half sigma steps from mean | |
|-------------|----------------|---|-------------------------------|------|
| 3 σ | .00443 | 3.84 | - 7.2 | 93.6 |
| 2½ σ | .0175 | 15.17 | 1.2 | 85.2 |
| 2 σ | .0540 | 46.82 | 9.6 | 76.8 |
| 1½ σ | .130 | 112.71 | 18.0 | 68.4 |
| σ | .242 | 209.81 | 26.4 | 60.0 |
| ½ σ | .352 | 305.18 | 34.8 | 51.6 |
| 0 | .399 | 345.93 | 43.2 | |

The instructions are: multiply Sheppard's z by $\frac{Ng}{\sigma}$

where N = total number of cases (here 1,457)

σ = standard deviation of score (here 16.8).

g = size of step used in grouping (here 10).

This gives the heights of the ordinates to be erected on the histogram (see Figure 6) at half sigma distances from the mean. Here the mean is 43.2 where an ordinate of 345.93 is erected. The next ordinate of 305.18 is erected both half a standard deviation above and below 43.2, that is at 43.2 + 8.4 (51.6) and at 43.2 - 8.4 (34.8): and so on.

APPENDIX IV.

PART OF MORAY HOUSE TEST 11.

- 1.—Do you understand that you must do your best and not ask questions?
If so write W in the bracket.. .. ()
- 2.—Write the letter which comes before R in the alphabet .. ()
- 5.—If 25d. is the same as 2/1 write F, if not write M .. ()
- 11.—Fill in the number which has been rubbed out in the top line of this
multiplication sum, and write it in the bracket as well ()
- $$\begin{array}{r}
 2 \quad . \quad 3 \\
 \quad \quad 5 \\
 \hline
 1 \quad 2 \quad 1 \quad 5
 \end{array}$$
- 20.—Chalk is to blackboard as pencil is to (grass, ink, paper, dust, point).
- 30.—If the letter G occurs most often in the word GIGGLING write the
middle letter of the word PIP, unless O and N come next to
one another in the alphabet, in which case write W instead ()
- 35.—In a certain secret writing
FNRH TNPRBUTZNDNRLF WKPZQEC means
send reinforcements quickly.
In the same secret writing you find this. Write below it what it
means:
ZUDN FUUR LU EURN LTNN
- 45.—Do you understand that you have to go on trying till time is up?
If so, write T.. .. ()
- 49.—Underline the word in the bracket which means nearly the same as
crooked (straight, large, round, bent, wide)
- 54.—The words in this sentence have been mixed up. Write it out as it
ought to be, beneath the printed sentence:
EARTH IS MINED COAL THE FROM
- 58.—Three posts are in an exact straight line, and from where I am
standing I can only see one of them because the others are
exactly behind it. I now move six steps to the left, so that I
can see them all. Which is the farthest away, the right-hand one,
the middle one, or the left-hand one? (right, middle, left)
- 71.—It is eleven minutes to nine. What time would you think it was if
you mistook the long hand of the clock for the short hand, and
the short hand for the long? ()

RÉSUMÉ.

LA STANDARDISATION DES TESTS PAR GROUPE D'ÂGE ET LA DISPERSION DES QUOTIENTS D'INTELLIGENCE. UNE CONTRIBUTION À LA THÉORIE DES EXAMENS.

L'auteur, après avoir inventé depuis douze ans des tests d'intelligence par groupe d'âge pour juger des enfants de onze ans, trouve que de tels tests donnent toujours un écart moyen plus considérable que les 15 points qu'on trouve ordinairement dans les tests de Binet. Il trouve encore que le technique du I.Q. tend à pénaliser l'enfant plus âgé, mais intelligent, dans un groupe d'âge. Il propose donc de substituer au quotient d'intelligence un Résultat Moyen soigneusement ajusté pour donner l'équivalence d'âge exacte aux niveaux différents d'intelligence. En fixant à 50 le Résultat Moyen normal on éviterait toute confusion avec les quotients d'intelligence ; tandis que l'on pourrait fixer à 15 l'écart normal d'après la dispersion ordinaire des I.Q. chez Binet. En passant on suggère une méthode pour mesurer la somme de préparation extraordinaire pour un test, en comparant les résultats moyens annuels avec les mensuels.

ÜBERSICHT.

DIE NORMIERUNG VON GRUPPENTESTS UND DIE STREUUNG DER INTELLIGENZ-QUOTIENTEN. EIN BEITRAG ZUR THEORIE DER PRÜFUNG.

Nach 12 jähriger Erfahrung in der Aufstellung von Gruppen-Intelligenzprüfungen für Elfjährige erkennt der Verfasser, dass solche Gruppentests beständig eine Standardabweichung des Intelligenz-Quotienten ergeben, die grösser ist als die gewöhnlich bei Binet-Tests gefundenen 15 Punkte. Er entdeckt ferner, dass die Quotient-Methode in der Regel die älteren begabten Kinder in einer Jahresklasse benachteiligt. Er schlägt daher vor, an Stelle des Intelligenz-Quotienten eine Standardzahl zu nehmen, die sorgfältig ausgesucht ist und bei verschiedener Intelligenz genügend Rücksicht auf das Alter nimmt.

Nimmt man als normale Standardzahl 50, so kommt eine Verwechslung mit dem Intelligenz-Quotienten nicht in Frage, während man doch die Standardabweichung mit 15 in Einklang bringen kann mit der gewöhnlichen Streuung von Binets Intelligenz-Quotienten. Nebenbei wird eine Methode vorgeschlagen, um zu viel Vorbereitung für einen Test nach dem Vergleich der jährlichen und monatlichen Mittelwerte zu verurteilen.

SPEECH AS AN EXPRESSION OF PERSONALITY.*

By T. H. PEAR.

(*From the Department of Psychology, University of Manchester.*)

- I.—*Psychology cannot justifiably neglect speech and personality.*
- II.—*Personality distinguished from character.*
- III.—*Speech a high-grade skill of rapidly increasing importance.*
- IV.—*Absence of satisfactory criteria of effective speech.*
- V.—*Criteria of voice and speech.*
- VI.—*The functions of speech.*
- VII.—*Criticism of written and spoken words.*
- VIII.—*Matter or manner?*
- IX.—*Suitability of voice and speech to their subject-matter.*
- X.—*Effective speaking should be taught in schools.*
- XI.—*The social importance of effective speaking.*
- XII.—*Conclusions.*

I.—PSYCHOLOGY CANNOT JUSTIFIABLY NEGLECT SPEECH AND PERSONALITY.

As I drafted this paper, three hard sayings pushed into my mind, took possession and rankled. The first was "Anthropology, like charity, should begin at home oftener than it does"; the second, "Until recently psychologists seemed to be interested in anything but human beings"; the third, "Give a psychologist a rat and a graph and you will get about the last word on the philosophy of education in the machine age."

Two of those remarks are English, one American. I have pondered them often, wincing. I feel that their authors would not disapprove my paper's title. I feel less sure of sympathy from English psychologists. Yet nowadays many thinkers are dissatisfied and suspicious about any description or explanation of the human mind which ignores the fact of personality, however well it may deal with some "single" power of the mind. As I write this sentence, the physical wave of sound reaching my ear is compounded from thousands of placid ripples breaking on the shore, and one child's happy crooning. I—not my ear, by the way—perceive

* Substance of paper read to the Psychology Section of the British Association for the Advancement of Science, Centenary Meeting, London, September, 1931.

this wave-front in two patterns, an impersonal sea and a personal child. For the psychologist no amount of good physics, bad metaphysics or microscopically detailed and depersonalized "sense-physiology" can destroy the distinction between those patterns.

II.—PERSONALITY DISTINGUISHED FROM CHARACTER.

Once you admit that personality is to be a chapter in your programme study, you will find yourself importuned, as at a Continental railway station, by people all anxious to guide you, but with very different credentials. Many of them state dogmatically what personality is. Others, confident that psychology ought to economize in terms (why, I have never discovered), achieve simplicity and opacity by using the same word to mean different things. They do not argue, they know. Personality, they say, is the same as character. A sub-class of this type urges, "What 'X' calls personality I call character . . ." One must reluctantly decline most of their services, imposing though the badges on their caps may be. Yet, for the purpose of this paper, a distinction must be made between personality and character. The definitions of which are offered here, though a liberty has been taken in re-phrasing them, are suggested by the writings of Dr. C. G. Jung and Professor William McDougall respectively.

Personality is defined as the effect upon others of a living being's appearance, sounds, behaviour, etc., so far as they are taken to be distinctive signs of that individual. Personality, therefore, can be expressed by physique, colouring and odours—all these may be completely natural or artificially modified—by clothes and behaviour. Behaviour, of course, includes gait, gestures, manners, voice and speech.

There are overlappings in this classification. Awareness of the factors of personality is not essential, and its degree varies in different persons, as anyone who has known an actor will attest. The possessors of marks of personality may be clearly aware, dimly aware or unaware of any of these effects, of their causes, or of the means by which they are produced.

Character is defined as the comparatively stable structure of a person's mind, wrought by abilities (habits, techniques, skills), sentiments, and by their integration into a relative unity. A personality-trait may produce an effect rapidly, as for instance, sixty seconds of Charlie Chaplin's uproariousness; real judgment of character cannot be immediate.*

* I have given detailed evidence for the utility of this distinction in Chapter IV of *Voice and Personality*, London, 1931. Cf. also "Stimme und Persönlichkeit," *Charakter*, Heft 1, pp. 40-44, Berlin, 1932.

If these definitions be accepted, voice and speech are increasingly important signs of personality in a civilized society. The study of their significance is valuable for individual, and invaluable for social psychology, a truth illustrated by the fact that in the British Foreign Office, and in the higher ranks of the Church, Army, and Navy, few persons speak with a "dialect" or "accent" indicating the geographical locality of their birthplace.

The problem of the connection, if any, of the voice with character must await more knowledge of the rôle of voice and speech in creating an impression of personality.

III.—SPEECH A HIGH-GRADE SKILL OF RAPIDLY-INCREASING IMPORTANCE.

The voice can be considered apart from speech, as when we judge a voice to be friendly, not knowing the language it is using. Yet this is seldom done in practice, except by little children and dogs. In the last eight years, broadcasting, the increased use of the telephone, and improvements in the sound-film and gramophone have sharply focussed the importance of personal characteristics in the voice. Speech, until lately, affected one person or a small group, while oratory was a technique used by only a few. Speech may now affect millions simultaneously. Psychologists will therefore have to consider it as a high-grade skill of increased and increasing importance. This skill has had to be modified recently to meet the new requirements of the microphone, to a degree unappreciated by the ordinary private or public speaker. Mr. Vernon Bartlett, one of the most successful broadcasters, on that difficult subject, international relations, writes :* "I doubt whether the average professor or politician can be converted into a good broadcaster," and gives reasons.

Broadcast speech, in fact, bursts upon us as a serious rival to the printed word. The seriousness may be measured by the degree of acidity with which its success has been recorded by certain upholders of print. This rivalry, and its background will suggest many new problems to those students of psychology and education who are exempt from the three chidings quoted in the opening paragraph of this article.

IV.—ABSENCE OF SATISFACTORY CRITERIA OF EFFECTIVE SPEECH.

The first problem is suggested by the present dearth of effective public criticism of speech. How could such criticism be initiated? One might examine the effectiveness of speech for its momentary purpose; a life's programme since hundreds of different purposes are conceivable

* *Radio Times*, 5 February, 1932.

now broadcasting and the talking films have arrived. Its beauty could be considered, though concerning this question there are local and social partialities. One might examine its various art-forms,* their development and the reasons, conscious or unconscious, for choosing them.

After twenty years of listening to different kinds of public speaking, I feel that it might be very much better. We badly need informed, unprejudiced criticism of the effectiveness and beauty of public speaking, of which voice-production is only one aspect. Progress awaits the appearance of such criticism.

In England there exists an interesting taboo upon criticizing, even mentioning a person's voice or speech. I write as one who has experienced the consequences of breaking it. Professional critics freely express views upon a person's style in writing, painting, music, sculpture, or sports, yet how seldom does one hear criticism, apart from indiscriminate praise or "guying," of voice or speech?

If I were to mention in detail serious defects noted in speakers, all of them invited to address and therefore, if ineffective, to waste the time of large audiences, I should break this taboo. To mention names would at present be unthinkable. This fact in itself is interesting, since if they had been writers they would have been criticized by name.

I will try to present, in abstract, some of these defects: †

Inaudibility, dropping the voice at the important parts of a sentence, saying nothing in many words, prefacing controversial statements by "of course," waiting for the inspiration of the moment (justifiable if and when it comes), reciting series of general statements without illustrative concrete examples, giving concrete examples without indicating the truth which they are meant to illustrate, not observing the effect of one's speech upon the audience, ignoring the type of audience to whom one wishes to appeal, using the wrong pace—too fast, too slow, or in broadcasting, insufficiently varied—assuming one's audience to be at a fever heat of expectation when (or because) one begins to speak—these are a few flaws.

If any should object that these faults concern not the psychologist but the teacher of voice-production or of elocution, it may be pointed out that the preparation and presentation of the material for the special purpose to the special audience is of intense psychological interest,‡

* Cf. the remarks on the lecture, the lesson, and the talk, in the writer's *Art of Study*, London, 1929.

† Let us assume, for politeness sake, that any one of the drawbacks mentioned below is the only flaw in an otherwise perfect presentation. Actually two or more defects are conceivable in the same speech.

‡ Professor Overstreet in *Influencing Human Behaviour* has demonstrated this strikingly.

since nowadays it concerns an extremely subtle behaviour-relation between the speaker and any number of persons, between one and ten millions.

V.—CRITERIA OF VOICE AND SPEECH.

Some qualities of voice and speech are desirable for all general purposes. Such for example are clearness, articulateness, and emphasis upon important words, though for artistic (e.g., dramatic) purposes all these qualities may have to be modified.

Perhaps the quickest, and at present the best, way to ascertain such qualities would be to ask those who select voices for broadcasting to record, in order of importance, the criteria which they employ. These lists might then be correlated.

Yet one or two points must be noticed here. Many decisions may be made upon a basis of factors of which the judge himself is not clearly aware. Such an everyday occurrence as an unconsciously noted resemblance between one voice and another biases our estimation. Some considerations important to judges of voices for the microphone may, for our present purposes, even be secondary or irrelevant. Such are the speaker's personal knowledge of, or responsibility for discovering his facts, his fame in spheres other than that of broadcasting or the quality or suitability of his "script," apart from the question of its authorship. Again, execrable speakers would presumably not be given, or would not pass, a preliminary microphone test. Few judges, perhaps, are likely to have studied their demerits with tender care. Yet a knowledge of the lower limits of badness may be indispensable to a psychologist who wishes to study standards of criticism.

VI.—THE FUNCTIONS OF SPEECH.

This is no place for a diversion to consider the functions of speech in modern civilization, or the terror which the word "language" seems to produce in persons who are not philologists. Yet the three chief functions of speech discussed by Professor Grace de Laguna* may usefully be kept in mind. Speech conveys emotion, it issues commands, and it communicates news concerning which no immediate action need be taken. The last-named type of communication has been developed to a high art by European university lecturers.

To begin his work the critic might ask how effectively the speech fulfilled its special function. Was it audible, pleasant to hear, did it deliver its message, did it offer unnecessary difficulty?

* *Speech*, Oxford, 1927.

I am unable to sympathize with the view that no talk or lecture which does not, in some unspecified way, cost the listener pain or pains, can be "educational." To scale a mountain entails exertion. Yet the glorious well-earned ache of one's muscles is not comparable to the plaguy rubbing of a badly-fitting shoe, especially if it has been bought in a famous and expensive shop. This is a parable, comprehensible to those who have thought rebelliously that certain school lessons and university lectures, unnecessarily difficult, elusive or dull, are unjustifiably defended by asserting that they are "educational."

VII.—CRITICISM OF WRITTEN AND SPOKEN WORDS.

Since words form the stuff of speech, it might seem that its future critics should be sought amongst the judges of written matter. I doubt the wisdom of this. The flickering sulphurous jets of light some writing men have thrown, from rakish angles, upon broadcasting makes one doubt their competence to deal with the spoken word. One critic, reviewing a book about the voice and broadcasting, filled up much of his allotted space by a list of his special qualifications for the task. They included a dislike of commercial enterprise, of America, of wireless receivers, and of popular education. He ended by admitting that he had "no passion for radio." This confirmed a suspicion the reader might have formed. A partially deaf man, incapable of moving rhythmically, who disliked impartially Palestrina, Beethoven, Mozart, Stravinsky, Hindemith, and Noel Coward would not to-day be an editor's first choice as a musical critic. Why then . . . ?

There is, however, one type of writer who would begin the test of speech-criticism with an advantage instead of a handicap. This is the person who writes for the reader's "inward ear." To realize his importance we must make some clumsy demarcations. Let us try to consider, apart from each other, writing for the reader's eye, for the hearer's ear, or for the intelligence of either, without considering the sense-organ to which the words will eventually be addressed. "Writing for the eye" may involve (1) choosing words which in print will be pleasing or striking, (2) writing to evoke visual images in the reader, or (3) writing to appeal especially to the "eye-reader," who grasps whole phrases at once, neglecting their auditory rhythm. One famous writer, whose delightful tail-chasings are easy for the eye, often difficult for the ear, was adversely criticized as a radio-talker for this fact.

Writing for the microphone offers special problems, since the author must keep in mind that sound alone can affect the listener. On him all supplementary, complementary, or compensatory gestures, experiments,

lantern slides, or "business" are wasted. To plan in advance speech which needs no visual help* and, as in good radio-drama, may even benefit by this lack, requires a special technique, developing in a manner which is of first-rate psychological interest.†

It is significant that Mr. James Johnston's interesting book *Westminster Voices* says comparatively little about the voices of Parliamentary speakers, but much about their choice of words, phrases, and visual supplements.

The regular appreciator of microphone speech-style has not yet been very articulate. One may, however, assume provisionally that his pleasure is derivable from the following sources, amongst others. He may enjoy the mere sounds, as for instance, those of the Abbey Players. This pleasure is comparable to the naïve enjoyment of Rimsky-Korsakov's music by a listener who knows no theories of tone-colour and orchestration. The words may be pleasant because they remove the listener mentally from his immediate surroundings, as the cinema does for the middle-West farm-hand, the slum-dweller, or the blasé Bloomsburyian. Sounds may please because they are "distanced," in space or time. Some ex-soldiers find more fun in the tones of the sergeant-major nowadays than when they were privates. A few radio listeners welcome the marking-off of certain programmes as Regional, because then they can use their "receiver" as a magic carpet.

VIII.—MATTER OR MANNER?

Some people demand that every picture shall tell a story and all music shall say something definite. Similarly, there are listeners who, so long as a speaker says "something," do not criticize the way in which he says it. It is an excellent thing that speakers should be encouraged to say something, yet a talk in which every sentence conveys a fact will probably do more good if one reads it in print. Insensitive hearers do not always realize, for example, that to be serious a speaker need not be solemn. It seems incredible that a broadcaster who last year gave a series of weekly talks on "People and Things" was judged by some to be an elegant trifler.

The musical executant and the mere music-lover not only appreciate a performance in different ways, but sometimes quarrel concerning the propriety of those ways. Similarly the gulf between a listener whose

* T. H. Pear, "Radio-Drama, Seeing with the Mind's Eye," *Radio Times*, XXXI, No. 392, April, 1931; *Voice and Personality*, 61, 89f, 95f, 105f.

† Cf. Tyrone Guthrie, "Squirrel's Cage and two other Broadcast Plays"; L. du Garde Peach, *Radio Plays*, London, 1931.

own profession requires public speaking and the "mere" listener may be wide. Many lecturers enjoyed the boyish gusto in Sir William Bragg's voice as, in the broadcast Faraday lecture, he called up for us the days when physics still emitted an odour of humanity. Yet conceivably some scientific researchers whose exposition consists only in reading papers to a visible audience of understanding colleagues who need no warming-up, no irksome explanations of simple concepts, no guiding away from the quagmires of misunderstanding, might not have appreciated the lecturer's art.

This example of a lecturer whose matter and manner are both supremely good is rare in these days. Critical listeners to music now demand, and successfully, that excellence in musical material shall not atone for badness in manner, and *vice versa*. Until public speaking is regarded similarly, we shall continue to suffer as we do now.

IX.—SUITABILITY OF VOICE AND SPEECH TO THEIR SUBJECT-MATTER.

A semi-musical listener might vaguely note something unfitting if he were to hear Debussy played on the harmonium. So might a university professor who beheld his robed colleagues preparing to walk in procession to the strains of a mandolin band. (Though the first example is imaginary the second is not.) Any criticism would indicate the perception of an apparent incongruity. Yet some types of voice and speech are just as unsuited to their subject and to their audiences. I have heard a ponderous voice reading from a manuscript, with pedantic exactitude, a talk entitled "In Lighter Vein." This fitness of delivery is important if we consider the different effects produced upon listeners by a person who talks intimately, either "straight" or through the microphone* and one who speaks in public, to audiences of different sizes and possessing different educational backgrounds. The success of these various effects upon the listener possibly necessitates the previous action, in the mental "producing apparatus" of the speaker, or writer of the manuscript, of some processes corresponding, or correlated, to those produced in the hearers. I wish to avoid any risk of suggesting that the producer's mental processes necessarily resemble the listener's. Some apt phrases are lightly launched from slips greased with midnight oil.

The psychology of composing can only be hinted at here, yet the predominant mental imagery of a person who, with dictaphone, pen, or typewriter, is preparing the manuscript of a talk will influence greatly his choice of matter and of manner. Many psychological questions are raised

* "Mr. Baldwin," writes a friend, "puts his feet in your fender"; "Viscount Snowden waggles an admonitory forefinger."

by the use, in such compositions, of the very short sentence, or of the "loose" as opposed to the "periodic" sentence.

So far as I know, few persons have discussed a matter of increasing importance in these days when philosophy, ethics, economics, and psychology are topics of common conversation. How many successive general statements unilluminated by concrete examples may be uttered profitably by a broadcaster, subject, if he is tedious, to instant invisible dismissal? I believe that listeners show considerable individual differences in this respect, and that these variations are well worth exploring. As for myself, if I listen to a long recited series of abstractions from a visible or invisible speaker, I find that I am thinking of something else. My conscience is lulled by the convenient excuse that such important matter will surely be printed so that I can read it at a later date, though actually, of course, it may not be printed in full, or at all, and almost certainly I shall forget to read it. Probably there are thousands of such lamentable listeners with minds of lowly organization, craving concrete examples to illustrate, even to verify phrases in the grand verbal fugue which rolls majestically from the speaker. If so, they are worth consideration. For what if that elusive person, the average listener, should be one of them?

To at least one listener it seems that a broad general statement can seldom be examined, except in the light of several specific examples. This, perhaps, explains why in one university broad generalization in common-rooms becomes a cultivated technique, while in another the generalizer's course is apt to be stayed by an interjected wad of concrete and opposed examples from experimental science.

I have read only one analytic printed criticism of a broadcast lecture which, by the way, was given long ago. The article is carefully filed. It may be a long time before another appears, since the lecturer recovered from the bite; the paper it was that died.

Lest any reader may be shocked at the audacity of criticizing a lecturer, it may be pointed out that, presumably, the speaker had occupied the time of thousands of listeners. Of these I was not one, and therefore can only quote the critic.

According to him, the lecture lacked originality, distinction, and charm of presentation. It heavily emphasized one side of a controversy and did not hint at the other. It recommended for further reading only four books, all of them old, all text-books, and all expounding the lecturer's own point of view.

I feel that even in admitting cognizance of such flagrant bad taste I am breaking a taboo. Yet why not criticize lectures? Music and cricket are discussed frankly in our newspapers. Sir Thomas Beecham,

conducting a famous Vienna orchestra at Salzburg last summer, interpreted Mozart in a characteristically personal way. His manner was frankly, enthusiastically criticized. A great team which plays safe dull cricket is reminded of this fact in the papers. Nobody who matters is shocked at the writer's bad taste.

From time to time criticisms of lectures by competent judges have been recorded. There is, I believe, a classic complaint about a lecturer who in his day decoyed adolescents from the sunshine into a classroom, to dictate to them extracts from a book which he refrained from publishing. This type of lecturer seems to possess survival-value, for secondary and indirect reasons.

Criticism at first will naturally be crude. It seems fair to demand that in its early stages it should be closely reasoned, so that it can be met by a denial of certain points, or by a justified statement of preferences in other directions. I do not know if fixed canons of speech-criticism exist; if they do, broadcasting will make hay of them. Yet vigorous destructive criticism of bad lecturers might perform the useful function of encouraging the others.

It cannot be gainsaid that during the last thirty years the prestige of oratory has declined, and with it criticism of public speaking of all kinds may have lost what edge it had. These facts have made it difficult for some of my older friends to embrace the belief that if a few reforms were made a Golden Age of Speech might arrive, since speech is so important nowadays and will count for more in the future. It is confusing to compare speaking with oratory, which seems to be related to modern effective speaking as ballet-dancing is to effective walking, running, and jumping, or as the terrific high-dives of the professional swimmer are to the neat six-foot swoops which we can see any summer's day.

I chose these two examples deliberately. Two generations ago a child who could not dance or swim might have regarded this inability as regrettable, but not as distinguishing him in an annoying manner from most of his fellows. Nowadays, happy is the youth whose first lesson in swimming or dancing came early in life, for modern society takes these skills for granted. It has ceased to regard the absence, or presence in a low stage, of the latter accomplishment as a sign of virility. Yet is not effective speech regarded to-day as an "extra," the possession of which ought to be dissembled, or condoned as a natural gift, lest any might suspect that such a thing could be either desired or learned?

X.—EFFECTIVE SPEAKING SHOULD BE TAUGHT IN SCHOOLS.

Why should not the younger generation learn to speak? Their swimming is very good. Can it be said that their speech is good? (I

refer not so much to the sounds they make as to their function in conveying meaning.) When it happens to be good, how much of this goodness do they owe to the schools?

One cannot generalize about schools in England, where the main reason for sending a child to any particular school may have been that it is the antithesis of one in the immediate vicinity. Yet in English schools, at present, with a few exceptions, children are not taught to express their thoughts in spoken English with ease, precision, and in such a way as not to offend hearers who belong to different social or geographical communities in the same country.

It is difficult to discuss the speaking of English without acknowledging the cruel social stratification of speech in England, and I for one do not intend to try. Boys are taught to hold a cricket bat and to kick a ball but not to use their speech mechanism for its most important purpose.*

There are some readers whose minds, at this point, will be drawn off into that whirlpool, the question of "Standard English" versus "dialect." I do not propose to rescue them, but urge them to exert a little skill to extricate themselves, and to exercise more care or intellectual honesty in future. Whether children's thoughts are expressed in dialect or standard English is a matter of secondary importance to that of expressing them effectively. There are thousands of people whose standard English seldom conveys anything worth saying, and not always because they have nothing to say.

In treating the matter of effective speech, I will discuss that section of the community of which I have everyday knowledge. Yet, since my occupation allows of travelling, and of making the acquaintance of different types of Englishmen in various parts of the country, I could perhaps cast my net wider with advantage.

Let us, in discussing the effectiveness of the university student's speech, assume that the universities do not get the less intelligent products of the schools. How many university students, elected to a committee in whose meetings they differ from people whom they wish to retain as friends, can speak with effect but without offence, can describe a difficult subject, arouse enthusiasm for a new topic, discuss honestly, patiently,

* An exception is made in the case of foreign languages. In some schools even this improvement is recent. I have heard broadcast lessons in foreign languages attacked on the ground that they lack the personality of the class teacher. If a personality's contribution is to be the emission of French or German with a pungent Yorkshire, Lancashire, or Essex accent, instead of the purer sounds of the native teacher—and, by the way, *do* the broadcast voices of these French or Germans lack personality?—is it good for the pupils? Is there any virtue, even in 1932, in branding French or German with our national mark? Could not the refulgence of the most brilliant class-teacher be dimmed for thirty minutes once a week?

and in detail, as distinct from debating pyrotechnically, a complicated matter? Debate is a "low" or simple form of verbal skill, depending for its success upon the unconscious co-operation of stupid opponents. Its value is pathetically over-estimated by many undergraduates, encouraged by the newspapers. Would it be kind to tell students of the contempt with which debating is regarded on constructive committees, where to call an argument a mere debating point is usually to annihilate it? Or is it better to say nothing? There are so few illusions nowadays.

It should be noted that many inarticulate university products can express themselves in writing. This is not surprising, since entry to any English university depends upon this skill. To some onlookers it seems not unreasonable to suggest that in the coming reorganization of the various universities' regulations for matriculation some of the time spent in examining the candidate's ability to write his native tongue would be more profitably utilized by ascertaining whether he can speak it. As things are, a few years after matriculation he may be rejected for a post involving public speaking by a committee, containing some of these examiners.* The Laodicean attitude towards speech in the universities adopted by persons who were elected to their own posts because they could speak is describable only by a combination of the analytic insight of Freud with the urbane incisiveness of Anatole France.

XI.—THE SOCIAL IMPORTANCE OF EFFECTIVE SPEAKING.

If the public speech-performances of English university students are poor, we can scarcely expect the average level of "extra-mural" speech to be higher. Yet one hears the suggestion that these young people, if and when (the "if" is a big one, not unconnected with the general theme of this paper) they give up some of their time to public work, will learn by trial and error to express themselves. The suggester might be asked if he has spent much time on committees, hearing the trials and errors. To the sturdy objection that in 1932 we require deeds not words, the reply is that in 1922 the worship of the great god Output was actuated by that creed, and words of criticism were not wanting even then. It may be regrettable, but the fact is that members of city councils do not communicate across the table by essays, poems, sketches, songs, miming, or by the glissades, entréchants and postures of the ballet. They speak . . . yet at times the hearer may entertain a faint speculation that something more might have been done for them at school.

* Cf. the articles on "What is Wrong with the Modern Universities?" By Professors E. R. Dodds, F. A. Cavenagh, J. F. Duff, and W. M. Tattersall, *Universities Review*, iv, 1 and 2, 1931-2.

urge that we abandon the belief that public speech ought not to be ed, because of the risk that the speakers or their teachers may have elings hurt. The former often hurt ours ; and the latter when they r this subject express almost every shade of opinion. Among pinions, however, one often meets the following, " Leave speech ie influences," " Let well alone," " Do not interfere with the 's picturesque, homely expressions." I would reply to those holding pinions, if they be teachers themselves, "Ask yourself this question, intellectually honest ? ' "

may be that at present, with some very marked exceptions I hasten to acknowledge, few persons could teach effective speech, eral reasons. Many university and school teachers have a habit, t to break, of talking downwards, seldom upwards and never itally. Not every teacher knows how to interest a class which, if l switch him off, would do so. Many teachers are more accustomed nd than to discuss their methods.

may be thought that the times are not favourable for suggesting s in the subjects to be taught in English schools. Yet the reading s paper was followed by an encouraging editorial in the *naster*. I will therefore conclude by recording this fact, and my that these suggestions are useful, educational, cultural, and truly atic.

XII.—CONCLUSIONS.

. a democratic society, effective speaking is urgently necessary. t standards of public speaking are low, and criticism is seldom ed or effective. In these days of increased social communication, asting and the talking film, the search for criteria of effective speaking s many psychological problems of the first magnitude.

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NGAGE PARLÉ COMME MANIFESTATION DE LA PERSONNALITÉ
ute psychologie qui néglige la personnalité est prédestinée à la l'impuissance. its caractéristiques qui révèlent la personnalité le langage parlé prend une once croissante. L'étude du langage parlé comme activité d'ordre supérieur. ste point encore de critères satisfaisants du langage parlé. Les fonctions du : parlé. Les critiques du langage écrit peuvent éprouver quelque difficulté du langage parlé. L'adaptation de la voix, de la parole et de la manière tière, problème important en ce qui concerne l'amélioration des conférences, cours de T.S.F. et du filme sonore. Variations individuelles de la mentalité s auditeurs. L'importance sociale de l'éloquence efficace. On devrait l'enseigner s écoles.

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ÜBERSICHT.

DIE SPRACHE ALS AUSDRUCK DER PERSÖNLICHKEIT.

Jede Psychologie, die die Persönlichkeit geringschätzt, ist zur Dummheit vorher verurteilt. Unter den charakteristischen Kennzeichen, die die Persönlichkeit ausdrücken, wird die Sprache immer wichtiger. Die Untersuchung der Sprache als Fertigkeit ersten Ranges. Bisher existieren keine hinlänglichen Proben der Wirksamkeit der Sprache. Die Funktionen der Sprache. Kritiker von geschriebenen Worten mögen aufgehalten werden, wenn sie wirksame Sprache beurteilen. Angemessenheit der Stimme, der Sprache und des Benehmens dem Stoff gegenüber als wichtiges Problem in der Verbesserung von Vorträgen, vom Rundfunk und vom Tonfilm. Individuelle Unterschiede in der Geisteskraft der Hörer. Die gesellschaftliche Bedeutung einer wirksamen Sprechweise. Man sollte sie in den Schulen pflegen.

"GESTALTTHEORIE": ITS SIGNIFICANCE FOR TEACHING.

By MARJORIE HAMMOND.

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- I.—*Gestalttheorie versus Associationism.*
- II.—*Experiments on visual perception in support of Gestalttheorie.*
- III.—*Kohler's physiological hypothesis in support of Gestalttheorie.*
- IV.—*The "flash of insight" preceding problem solving.*
- V.—*The work of Ward and Stout.*
- VI.—*Experimental work on the relative value of "whole" and "part" methods of learning school subjects.*
- VII.—*The teaching of school subjects by "whole" and "part" methods.*
 - (a) *Subjects tending to be taught on "whole" methods.*
 - (b) *Subjects in which "part" methods of teaching are customary.*
- VIII.—*The bearing of the psychology of wholes to the teaching craft.*
- IX.—*Young teachers adopt "part" methods almost invariably. Why?*
- X.—*Summary and Bibliography.*

I.—GESTALT THEORIES VERSUS ASSOCIATIONISM.

PHILOSOPHERS, in the opinion of Plato, should direct the practical affairs of men. Psychologists are in a humbler position, their knowledge as yet is tentative, they offer it to the teacher for what it is, and the teacher in applying it to his teaching, tests its worth.

History shows that there has been, if not a purposive, yet a loose (though not always synchronous) connection between Psychology and Education. When the Psychology of Association held sway in the universities, piecemeal methods of teaching were practised in the schools, recently Gestalt Psychology and wholewise methods of teaching have appeared together.

The "Gestalt" theory of mental structure is the logical contrary of the theory of association, both may be false, but both cannot be true.

Associationism, the belief that the structure of the mind consists in elementary units held together in groups by laws external to themselves, is the oldest of psychological theories. Known to Aristotle, it dominated the thought of our English philosophers, of Hobbes, Locke, Hume, Hartley, the two Mills, and of Bain, its last wholehearted defender. Its

* Based upon a paper read to the Midland Branch of the British Psychological Society.

later history depends on Herbart's work, and "for half a century Herbart provided the magic formula for Education."

The belief that all phenomena of consciousness have arisen from the association of ideas received further support in the nineteenth century from the physiologists. It was supposed that each primary sense experience (elements not recognizable in consciousness but purported to be the basic constituents of ideas) was correlated with the discharge of a cell in the nervous system occasioned by the stimulation of a nerve fibre by the physical world. This hypothesis required a one to one correlation between the nerve fibre and the sense experience and mind was regarded as the resultant of a summation of sense experiences, at the same time behaviour was the resultant of a summation of discharging nerve cells. It was not a long step to explain behaviour by leaving out the mind and substituting physiological process. This was the step taken by the Behaviourists. They share with the Associationists the double triumph of routing the time-honoured Faculty Psychology and of rousing the pursuers of Gestalten to vehement expression.

The theory of association according to psychologists of M. Ribot's period "explains all intellectual facts."* Universal propositions of this kind are easy to refute. It appears that some facts cannot adequately be explained by an atomistic theory, some questions cannot be answered. For example, how from an original chaos of sense elements can there be developed a sensory field containing objects in position? How from a mind whose structure is conceived as a mosaic of sense impressions and of copies of sense impressions, depending for its pattern on the laws of contiguity and similarity, can develop recognition of articulated wholes, or of the forms of melody or of structure?

These were questions asked by our great English psychologists, Ward and Stout, but theories of progressive differentiation of the continuum, mental dispositions, meanings primary and acquired, did not wholly answer the questions.

During the present century a group of psychologists in German speaking countries has been occupied with the study of "Gestalten," a word variously translated as shapes, forms, structures, wholes, and perhaps most aptly by Titchener, as configurations. The central thesis of Gestalt Psychology can be expressed in Titchener's words "Knowing does not come any more than does mind from the addition of sensation to sensation."† Wholes (Gestalten) or configurations are more than a summation of parts.

* *La Psychologie Anglaise.*

† Titchener, *Experimental Psychology.*

The German workers on Gestalttheorie fall into two main groups--they divide on the question of the status of parts. One group led by Meinong, Witasek and Benussi, and having some affinity with the views of Ehrenfels (referred to by Professor Spearman* as the binarians) regards Gestalten as emergents, resulting from a creative act of mind upon the contributory parts; the other school led by Wertheimer, Koffka and Kohler (referred to by Professor Spearman as the unitarians) posits no special processes or acts, but believes that the wholes (Gestalten) are experienced as prior to and without references to parts. "When there is a Gestalt there are no parts, when parts are designated there is no Gestalt."† Kohler exactly puts the point of the Unitarians in the following words, "between the stimulus and the reaction there is the organization of definite wholes with specific properties upon which the reaction so obviously depends."‡

Gestalt theorie as expounded by the unitarians is best known in England through the translations of three excellent books, Koffka's *The Growth of Mind*, Kohler's *The Mentality of Apes* and his *Gestalt Psychology*.

In 1912 Wertheimer started afresh and gave new life to the theory, the germ of which can be found in the works of Wundt, Kulpe, and Titchener between 1901 and 1908. Since then experimental research has never flagged and reports now total hundreds of pages in the *Psychologische Forschung* (founded in 1921) and elsewhere.§

II.—EXPERIMENTS ON VISUAL PERCEPTION IN SUPPORT OF GESTALT THEORY.

Though the theory of Gestalt refers to a wider field, experimental work so far has been concerned mainly with perception (most particularly perhaps with visual perception) but valuable experimental work has also been done on memory and in the investigations, reported by Koffka and Kohler in the books mentioned above, into the rudimentary mental processes discoverable in infants under three, apes, and lower animals.

A brief description of a few of the experiments performed may help to elucidate the cardinal point of the theory, viz., mind, even at a low level, responds to the form of an organized whole.

Köhler, repeating experiments performed by Lashley, trained chicks and apes to choose always the darker of two presented greys. After the

* *British Journal of Psychology*, 1925, and Spearman's *Abilities of Man*.

† W. D. Ellis' *Gestalt Psychology and Meaning*.

‡ Kohler's *Gestalt Psychology*.

§ See Helson's *Psychology of Gestalt*, in *American Journal of Psychology*, 1925-26.

training period was completed the creatures were presented with another pair of greys, one grey of which was identical in shade with the darker of the two previously presented (i.e., with the correct grey in the training experiment) and the other darker than that. In the majority of cases Köhler found that the grey, formerly the correctly chosen one, was passed over and choice was made of the darker of the new pair, whatever the relative position of each to the other.

We may conclude, writes Köhler* that animals react to such pairs as to wholes. They choose not a specific grey (as one would expect under the "stimulus and response" formula) but the darker of a pair.

Another experiment carried out by Hertz illustrated the same point. A number of flower pots were put upside down upon the ground in a symmetrical form such as a straight line, circle, or ellipse. Food was put under one in the sight of a rather tame wild bird. Very soon the bird flew down and overturned the pots till he found the food. The experiment was repeated, but this time the pot concealing the food was put in a unique position relative to the symmetrically placed pots, say in the centre of the circle, or touching the rim of one of the pots forming the circumference. Subsequently the bird flew without hesitation to the right pot. Birds thus appear, like men, to react to pattern and recognize objects segregated in a visual field. Even the blind man, according to Köhler, sees, on receiving his sight, things as segregated units. The patients do not have to learn what "aggregate of sensations" they shall "treat as one thing."†

From such experiments as these indicated, and many others, it appears that simple configurations are primitive modes of behaviour which in no wise presupposes the existence of absolute sensations.

Koffka's‡ observations on the responses of infants lead to a similar conclusion. An infant in its second month recognizes its mother's face, in the sixth month it distinguishes a friendly expression from an angry one. It responds to faces before it responds to simpler sense experience such as colour. These achievements would, in Koffka's opinion, be impossible to explain on the assumption that they result from a summation of single visual sensations from out a chaos of sensations. Koffka holds that "the first phenomena are qualities upon a ground," they are the simplest mental configurations. He supports his conclusion by studying phenomena in connection with the perception of geometrical diagrams.§

* Köhler, *Gestalt Psychology*, Chap. VI.

† Köhler, *Gestalt Psychology*.

‡ Koffka, *The Growth of the Mind*. See also the *Psychologies* of 1930.

§ *Psychologies* of 1930.

III.—KÖHLER'S PHYSIOLOGICAL HYPOTHESIS IN SUPPORT OF GESTALTTHEORIE.

The theory of one to one correlation between stimulus and cell requires revision if the unitarian's view of configurations or "Gestalten" is accepted. Köhler suggests the lines of revision. He supposes that "whatever is experienced has a dynamical basis physiologically." Dynamical "self-distribution regarded as a functional whole and opposed to the order enforced by arrangement" is the functional concept which Köhler proposes to add to psychology.* His meaning seems to be that configurations or mental structures (such, for instance as a visual field containing objects in position, or such as a melody) somehow arise by a dynamical action and reaction between a physical world and an organization—the experienced field settles as it were "into shape" when the stresses and strains between organism and physical world are resolved and equilibrium has been attained. Another analogy drawn from the field of electricity may help to elucidate Köhler's hypothesis. "Gestalt theorie," it has been said, pictures an uninsulated system of nerve fibres, and these with the stimulating situation, form a single system. For the nervous system, the result of stimulation is a redistribution of electrical potential within the system towards a new point of equilibrium." Köhler holds that the same kind of dynamical process which accounts for the segregation and organization of wholes (configurations) also accounts for their qualities, relations, and forms. Thus he disagrees with the view held by certain of the binarians that a creative act of mind is required "to discover qualities."

But Köhler's other view, namely that "Gestalten" (configurations) are not resultants of summations of parts, is based not on hypothetical physiology but on direct experiment. These experiments show that the part is what it is by its position in the whole† and that the whole which has qualities of its own is altered by the subtraction of a part. Indeed these Gestalten appear somewhat to bear the character of the Aristotelian soul "all in the whole and all in every part."

Köhler holds that direct experience can give us a clue to the form and structure of the underlying physiological process provided we regard "congruency" between the two. Conversely and consistently with this, he holds that we can infer the mental experience of another by his behaviour.

He does not hold that a similar congruency exists between the mental experience and the physical world which arouses and conditions it;

* Köhler, *Gestalt Psychology*.

† See Köhler on "The Properties of Organized Wholes," *Gestalt Psychology*.

for him the physical world and the world experienced are no more the same than "a gun is the same as a wound."*

Even Kohler it appears is shackled by the chains of tradition. "Things as they seem," not "things as they are," are for him the objects of experience.†

IV.—THE "FLASH OF INSIGHT" PRECEDING PROBLEM SOLVING.

So far we have only dealt with the simplest processes of visual perception: we must pursue the doctrine of Gestalten to fresh coverts.

Köhler's experiments on chimpanzees, which mark a great advance on animal psychology, are too well known for detailed account to be necessary. The experiments were devised with a view to finding whether the chimpanzee could discover the means of solving a simple problem within the range of his interests, e.g., could he devise a tool, given the necessary material, for bringing within grasp fruit beyond his immediate reach. Could he, for instance, hit on the plan for fetching, placing in position, and piling up boxes to reach fruit fastened high up in the roof? Could he discover a way of drawing fruit beyond his reach from outside into his cage, given separate hollow canes which could, if he but discovered it, be fitted one into another to make a single stick long enough to reach the fruit?

Köhler found simple problems of this kind were within the range of the more intelligent chimpanzees. The animal, when faced with his task, would tend at first to make futile attempts, later to quieten down and perhaps to sit playing apparently aimlessly, with the materials for tool making, suddenly, he would assume a purposive and enlightened air—he would get up and more often than not would, without hesitation and without error, perform the sequence of actions necessary for the achievement of his goal.

The procedure from start to finish, suggested to the observer action guided by insight, i.e., by a grasp of the structure of the situation. Thorndike's theory of trial and error and the retention of lucky chances does not seem to explain the apes' intelligent behaviour so well as does the theory of Gestalten (i.e., mental structures, configurations, wholes with parts subordinated). The flash of insight, observed in the chimpanzee's behaviour, is experienced by human beings at work on a problem. It is regarded by Gestalt theories as the critical instance which overthrows atomistic doctrines.

* *Gestalt Psychology*.

† See *Psychological Review* (September, 1930), *Dualism and Gestalt*, Grace de Laguna.

The experiments carried on by Köhler and his co-workers have been confined to the lower levels of mind activity, though more is promised. The conclusion so far reached by them seems to be that mental experience (even the most primitive) is configurational.

V.—THE WORK OF WARD AND STOUT.

In indicating the significance of Gestalt Psychology for Education, minds will be considered at work on levels higher than those tested by Köhler and his school. This is legitimate in the writer's opinion, since all in Gestalt that is useful for education can be found in the works of Ward and Stout.

It is curious that the German psychologists of the Wertheimer school have given such scant recognition to the works of these English psychologists whose principal publications were dated prior to their own.* Both Ward and Stout were in no doubt that the act of apprehending the whole is other than that of apprehending parts. In witness of this two quotations will suffice, the one from Ward's work† and the other from Stout's brilliant chapters on "noetic synthesis" and "relative suggestion."‡ "In any given moment," writes Ward, "we have a certain whole of presentation"; "noetic synthesis," in Stout's opinion, "owes its peculiarity to the introduction of a distinct kind of mental factor, the apprehension of the whole which determines the order and connection of the apprehension of parts." Either passage might have come from the book of an approved Gestaltian! Perhaps the observed neglect of our English work, at any rate by the Wertheimer school, is due in part to the fact that neither Ward nor Stout conform explicitly to the strict "unitarian" view that the form and qualities of wholes come to the mind with equal immediacy. Stout,§ at any rate, refers with appreciation to the work of Ehrenfels, whose views are more allied to those of the "binarians."

As a matter of fact, however, the controversy between "binarians" and "unitarians" is, for purposes of education, an academic one. Spearman's principle of perceiving relations include both "binarian" and "unitarian" modes of mental operations, and yet educational methods based on his *Principles of Cognition* would be much the same as those on the Gestalt doctrine of the "unitarians."|| Perhaps Ward's and Stout's neglect of

* Ward's articles in the *Encyclopædia Britannica* appeared 1885, 1902, 1908.

† Ward, *Principles of Psychology*.

‡ Stout, *Analytical Psychology*, Vol. II. See also McDougall *Body and Mind*, Chap. XXII.

§ Stout *Analytic Psychology*, Chap. III, Vol. I.

|| Spearman, *Creative Mind*, Chap. III.

systematic experimentation* and their retention of the terms introspection, meaning, attention, may have something to do with the silence concerning them of their German brethren.†

Henry Sturt in his *Principles of Understanding* develops Stout's theory of "noetic synthesis," and since this book first suggested to the writer the significance of the psychology of wholes to teaching method it may be of use to indicate his view. Intellectual life, he holds, is not continuous and steady, but rather "a series of efforts with distinct boundaries."‡ "Speaking broadly," he writes, "we may call it the cognition of various series of patterns." He does not confine himself, in illustration, to primitive types of mental activity, but shows that mind engaged in the highest activities, such as invention, or in the understanding of music, the comprehension of a scientific or philosophical thesis, works on the wholewise plan. He points out that the mind's work in its highest as well as its most primitive activities is done by flashes or instantaneous strokes; on no other basis could the "total working" nature of the mind stand. Here he is exactly in line with the conclusions of the Gestalt psychologists.

In passing it may be noted, if these conclusions are sound, that the practice of requiring our pupils to solve problems or to write compositions in one set period of home-work is asking for failure. The flash of insight is preceded by longer or shorter period of maturation (to use Koffka's term).§

Sturt suggests the application of the theory of the "total working" quality of mind to teaching. He writes, "The conception of a totality seized at once and then further defined seems to lend itself better to the theory of teaching than the widely current conception of an apperceptive mass of ideas. On Herbartian principles the business of the skilful teacher is to link new ideas on to the apperceptive mass already existing in the pupil's mind." . . . On the other hand the theory just advocated leads to another method. "The teacher first considers in what way the subject to be taught can be made to appeal most effectively to the pupil's known interests; then he gives a general

* Introspection (*pace* the Gestaltians) has supplied Stout with a better illustration of Gestalt working than any that has come out of a psychological laboratory. He writes in the *Manual* that the line "Tum pius Æneas umeris abscondere vestem" brought to his mind the prosaic notice, "Smoking is not allowed in the Courts and Grounds of the College." This fact he holds cannot be explained by a physiological theory of stimulus and response. The identity of the metrical form of the two lines furnishes for him the explanation.

† Ward's debt to German contemporary thought must also be recognized.

‡ Cf. the Gestalt theory of closure. See Ellis' *Gestalt Psychology and Meaning*.

§ Cf. The flash of insight exhibited by Köhler's chimpanzees, Köhler, *Mentality of Apes*.

account of it with the central idea specially related to those interests, then he fills in the details not elaborating fully any one part in isolation from the rest."

VI.—EXPERIMENTAL WORK ON THE RELATIVE VALUE OF "WHOLE" AND "PART" METHODS OF LEARNING SCHOOL SUBJECTS.

Before following up this clearly given lead and considering methods of teaching consistent with the belief that mind works not by adding part to part, but rather wholes by insight into pattern, it may be useful to glance at the experimental work done by contemporary psychologists on "the economy and technique of learning."*

Useful suggestions for experiments designed to test the relative efficacy of the "whole" and the "part" methods of learning, are given in Professor Valentine's *Introduction to Experimental Psychology*. These refer directly to the learning of poems and the learning of vocabularies. The method described, however, applies to the learning of any school subject, e.g., tables, dates, and indeed to the rational learning of history or of a play. Some, though too few, experiments of the kind indicated have been carried out and the results published; by far the greater number of these however refer to memory.† The writer has failed to discover any published reports of exact experiments designed to investigate the relative efficiency of "whole" or "part" methods of teaching history, language, or literature.

VII.—THE TEACHING OF SCHOOL SUBJECTS BY "WHOLE" AND "PART" METHODS.

The learning (and, therefore, the teaching) of school subjects may now be discussed. First we will consider subjects the teaching of which by "whole" or "part" methods has been experimentally investigated under rigid condition (though, be it noted, no certain conclusions have yet been reached.) The teaching of reading, poetry, and number has been studied on these lines.

Definite experiments have been carried out on the teaching of reading. Not very long ago children learnt first the alphabet, then to read words, then sentences, and finally paragraphs; now the tendency is to make the sentence the unit of instruction, the elements falling into their places.‡ Poems, till recently, were learned verse by verse (or even

* Myers' *Text-book of Experimental Psychology*.

Rusk, *Experimental Education*, Chap. 13.

Valentine, *Introduction to Experimental Psychology*.

† See, for instance, Sawdon's article "Should children learn poems in wholes or in parts?" (*Forum of Education*, Vol. V), also Rusk, *Experimental Education*.

‡ Rusk, op. cit., Chap. 15. Also Huey, *The Psychology and Pedagogy of Reading*.

line by line) ; now, however, the pupils are sometimes instructed by their trained teachers to learn the poems in wholes or in sections (i.e., lesser wholes), according to the length. The infants' rooms in most elementary schools to-day are decorated by "number pictures," following Freeman's lead (i.e., by disks arranged in patterns to represent the number).*

So little experimental work on whole and part methods seems yet to have been done that the investigator of the whole or part methods of teaching must have recourse to the less exact but often very significant experience of the teacher. The present day tendency to teach music, art, and craft, on "whole" methods, depends on the pragmatic test ; these methods, in the experience of the teacher, appear to work. In the old days the boy was taught to make joints, plane and saw, put on hinges, etc., before he was allowed to make the rabbit hutch that required these skills. On "whole" methods he is now usually allowed to start on the hutch and to achieve the minor skills with that end in view.

In the last years of the nineteenth century, children were set to draw vertical and horizontal lines, and to play five-finger exercises ; now children may draw pictures and play melodies from the outset, acquiring the necessary skills in service of the whole. The same tendency is seen in the teaching of the academic subjects. The direct method of teaching languages, for instance, is more in line with "whole" methods than was the method used in the writer's schooldays, when first nouns and their declensions had to be mastered, then lists of exceptions, then adjectives, then verbs, and finally sentences. In those days history was taught by the reign and plays of Shakespeare by the scene (strictly with the aid of a Glossary). Now, often, attempts are made to help the pupils to grasp the general purport of the period or the play, before proceeding to analysis.

The teaching of Scripture and some branches of mathematics seem to have lagged behind. "Part" methods are still customary. Students attempting to give twelve Scripture lessons in our elementary schools are frequently required to teach six miracles and six parables, thus successfully frustrating a conception of the personality, as a whole, of Jesus of Nazareth. "The record in misfortune," to quote Miss Wodehouse, "seemed to belong to one young teacher who believed herself required to spend a hundred lessons on six parables."† A young teacher in the early years of her teaching was set to teach certain of St. Paul's Epistles to a class of intelligent girls of average age fifteen. During

* Rusk, *op. cit.*, Chap. 18.

† Helen Wodehouse, *The Scripture Lesson in the Elementary School*. Miss Wodehouse pays special tribute to official syllabuses issued by the West Riding and Cambridgeshire Local Authorities and by the Manchester, Winchester and Derbyshire Diocesan Councils.

the previous session the pupils had studied the prophet Jeremiah, but some of them claimed no knowledge of the Acts, and all were ignorant of Jewish history as a whole and the development of religious thought, knowledge indispensable for a true understanding of the epistles, of the problems St. Paul had to face, and of his teaching. The class was asked to choose between concentrating attention on the syllabus for three terms, or relegating the study of the specific subjects prescribed by the syllabus to two terms, and spending the first term in a general survey, aiming at putting the epistles in their social and historical background. The class voted unanimously for the more liberal treatment, the treatment which put the epistles in their place relative to a larger whole. In spite of the fact that the syllabus was not completely covered by the end of the session, the results of the examination and the report of the external examiner compared very favourably with those of parallel classes which had concentrated more definitely on the epistles. The teacher claimed neither experience of, nor special ability for, teaching literary subjects. Satisfactory results were probably due to the interest that "whole" methods inspire.

Mathematics is said to be the worst taught subject in girls' schools, and perhaps in the senior classes of elementary schools. Here "part" methods are rife; equations are apt to be taught before the problems they serve are introduced, substitution before the making of formulæ, and straight line graphs (by blindly plotting points) before the introduction of similar triangles, direct proportion before inverse. A student in training recently carried out an experiment in the teaching of proportion. She divided the class into two groups of equal ability and size. To the one group she presented direct and inverse proportion in the same lesson unit, enabling the pupils from the outset to gain insight into the "pattern" or "structure" of the configuration corresponding to proportion (*viz.*, direct and inverse ratio); to the other group she taught first direct proportion, then inverse proportion, and finally she mixed the sums in the approved style. The group taught on the "whole" method did better than the group on the "part" method in the test at the end of the course; for the experiment to be completed, however, the groups should have been submitted to a "long distant" test. A great many experiments on these lines need to be conducted on classes of low, average, and high arithmetical ability before experimental evidence can give a lead to the teaching of proportion.

The three main cases of the congruency of triangles are but special cases of the three main cases of the similarity of triangles, yet seldom is the matter presented to the pupils in this light; instead, the teacher tends

to establish in the minds of his pupils a closed configuration corresponding to congruent triangles, and another established much later and equally closed, corresponding to similar triangles, thus discouraging the vision of the whole of which similarity and congruency are aspects.* Teachers can demonstrate for themselves the saving of exposition effected by introducing together all converse propositions, those occurring in geometry and algebra ; products of given factors and factors of given products can be treated in the first lesson as variants of the same principle. The beginnings of differential and integral calculus can similarly be treated, finding the gradient of a simple function and, conversely, finding the function from knowing the gradient.

Teachers are apt to destroy the romance of mathematics by apparent indifference, while custom and piecemeal methods have perhaps damped enthusiasm for the essential beauty in the subject. If all minds cannot appreciate beauty in the harmony and unity brought out of seeming chaos by the recognition of mathematical relations, at least more minds might see it if things that are related were presented together. Our attitude as teachers of this subject is not philosophical enough ; we lose the essential unity by teaching various rules in isolation one from the other. Consider, for instance, the teaching of the properties of the sphere to beginners. The common custom is to demonstrate great circles and small circles on a tennis ball and to require the learning of definitions by heart. More interest and significance would surely be achieved if the teacher had related the matter to physical geography and astronomy. A lighted candle for sun, a ball for earth, pierced by a knitting needle fixed in a flower pot at the angle the axis of the earth makes with the ecliptic, another ball for moon, also pierced by a knitting needle and fixed in a pot, is sufficient and effective apparatus to demonstrate to children of twelve the phases of the moon, phenomena of sunset and sunrise, and incidentally, lines of longitude (great circles) and of latitude (small circles) and indeed all the geometry of the sphere that is required.†

* The Report on the Teaching of Geometry brought out by the Mathematical Association indicates how similar triangles may be treated in the first year experimental course preceding the formal study of Geometry (Stage A).

† (a) See also the Navigation problems and Map Projections proposed by Professor Nunn in *The Teaching of Algebra (and Numerical Trigonometry)*, Section V. This book does appear to indicate how to teach mathematics philosophically, i.e., wholewise, each part as an item of a larger whole. See, for instance, how the secondary pupil is taken by easy stages over a field covering the linear, the hyperbolic, the parabolic, inverse and logarithmic functions, trigonometrical functions and periodic functions illustrated by wave motions. See also the masterly treatment of Complex Numbers (Section VI).

(b) A useful list of books on the teaching of mathematics and on subjects illustrating mathematics principles has been drawn up by the Girls' Schools Committee of the Mathematical Association and published in the report "Elementary Mathematics in Girls' Schools."

Ratio, though at the basis of all mathematics, is a subject usually taught in a piecemeal fashion, thus disguising its essential nature. Whole methods of teaching would suggest that the mathematical syllabus of children aged about twelve should involve the exploration of a wide field, ratio relations being progressively discovered in the field, sometimes in their geometrical aspects (approached through Boy Scout surveying and through simple mechanical experiments involving ratio, leading for instance, to the formulæ $S=ut$, $P=mf$, $F=\mu r$, and the relation of image to object)* and sometimes in its numerical aspect (including direct and inverse proportion, percentage).

It may be objected that the time of a lesson does not permit the presentation of more than one relation. It allows, for instance, for the introduction of one case of congruence, it allows for the teaching of direct but not of inverse proportion, and so on. The reply would be that the unit of instruction does not necessarily coincide with the unit of time (i.e., lesson period).

A more potent objection may be that a child will get muddled if expected from the first to get insight into the structure of a complex field. It is, however, the teacher's business to decide the "size" as it were, of the articulated whole, and the degree of configuration the child, at its stage of mental development, should attain.†

The writer has enlarged on the teaching of mathematics by whole methods in the hope that teachers may be stimulated to experiment more freely on whole-wise ways of teaching their own subjects.

VIII.—THE BEARING OF THE PSYCHOLOGY OF WHOLE TO THE TEACHING CRAFT.

We will now consider the lead that the psychology of wholes is giving to the more general matters relating to the teaching craft.

The brand of this psychology (whether one-step or two-step, whether Ward or Stout's psychology, or Spearman's principles of cognition,‡ or the

* Miss Lucy Wilkes, in a thesis entitled *Considerations in the Teaching of Mathematics*, presented for an M.A. degree in Education, Birmingham University, in 1930, has demonstrated that elementary school children of this age are quite capable of appreciating these simple mechanical problems, provided rough apparatus of the type designed by Luke and Saunders (see their *Experimental Science in School*, Books I, II, III) is brought into the school-room.

† A whole too large for the mind's apprehension frustrates learning. Experimental work on this question of the size of the whole relative to types of intellects and stages of development is overdue.

‡ Spearman claims that his principles of cognition supply the Gestaltian of binarian views with the laws which "form creating" minds obey. It is not surprising therefore that his principles point to the same kind of teaching method as that suggested by the psychology of "Gestalten."

German psychology of Gestalt) need not for the immediate purpose concern us.

Ballard, so far back as 1915, exposes a teaching defect which destroys our full efficiency as effectively to-day, "The teacher always will be demonstrating."* Ballard's criticism would be less deserved if teachers accepted the standpoint of any of the psychologies mentioned above. These combine to tell us that the learner must have a "lived experience" of the whole field (or continuum)† before he can "progressively differentiate" it‡ or "know the relations" within the field.§ A lived experience, as Professor Dewey|| has very clearly taught, is not achieved by passive acceptance of oral teaching. Nor can overmuch oral teaching do anything but hinder the pupil's creative work. The essence of problem solving and of invention (whatever the subject matter may be—philosophical or practical) consists in picking out relations familiar in old contexts and applying them to new.** This is only possible when the context has been made familiar, not by hearsay, but by the student's personal exploration.††

Since the possession of appropriate configurations are necessary both for the works of understanding and of invention, it follows that it is the teacher's business to ascertain the mental configurations already possessed by his pupils and to provide opportunities for the achievement of others judged to be of value. A source of error and sometimes of humour lies in the difference of configurations in the teacher's and pupil's minds.

Range and variety of configurations enrich the mind, whereas a mind dominated by a master configuration is apt to lose its balance and the judgment necessary for the pursuit of truth.‡‡ The psychology of configurations provides as good a theory of explanation (the teacher's handmaid) as does the old Herbartian Psychology and on similar lines.§§

A few words in passing may be said of examining. Ballard, in his *New Examiner*, indicates that quantities of short tests, each of which may involve a single act of judgment to be recorded on the paper by a

* *Journal of Experimental Pedagogy*, 1915.

† See Spearman's first law of cognition, *Principles of Cognition*.

‡ Ward, *Principles of Psychology*.

§ See Spearman's second law of cognition, *Principles of Cognition*.

|| Dewey, *Schools of To-morrow*; also *Democracy and Education*.

** See Spearman's third law of cognition, *Principles of Cognition*.

†† See S. R. Laycock's thesis, presented to the University of London for the degree of Ph.D., entitled "An Experimental Investigation into Adaptability to New Situations," outlined in Spearman's *Creative Mind*.

‡‡ In connection with this see McDougall's theory, in his *Social Philosophy*, of the hierarchy of sentiments in which "self-respect" is high priest.

§§ Adams, *Herbartian Psychology and Exposition and Illustration in Teaching*.

single sign, give a better indication of intelligence than the old-fashioned examinations on composition and arithmetical and geometrical problems.

Degree of intelligence relative to any field of presentation is gauged, according to Gestaltian theories, by the range and degree of the complexity of the whole into which intelligence has insight. It would seem, therefore, that the new examiner is defeating his object by doing the work of insight, that is, by himself resolving the problem (or complex whole) into its steps (themselves wholes of simpler structure). Examination procedure is, however, so full of pitfalls that wholesale or partwise methods cannot stand or fall with it.

IX.—YOUNG TEACHERS ADOPT PART METHODS ALMOST INVARIABLY. WHY?

It appears from what has been said of "whole" methods of teaching, upon which little exact experimenting has been done, that such methods tend to enrich the mind and to stimulate vision more effectively than "part" method. The reason may be, as the psychology of "wholes" would suggest, that "whole" methods appeal to the "total workingness of the mind." There is, however, a remarkable fact which shakes confidence in this explanation.

If the mind is total working and is not the sum of simple ideas, why is it that almost every young, untrained teacher seems naturally and almost invariably to present his subject on true atomistic lines, building up the whole by a process of adding one idea to another? Students in their first term of training, preparing notes for a first lesson on heights and distances, will start with a discussion on points, pass on to horizontal and vertical lines, continue with the angle of elevation and end by remarking to eleven-year old pupils that next week they might proceed to find the height of the schoolroom! Recently the writer heard a lesson on John Gilpin. Before the children were allowed to read a line of the ballad, they were asked to give meanings for words that occurred in the early verses: "eke" and "spouse" (for which they suggested "suppose" and "chaise")—and this, in spite of the fact that the context could not fail to suggest the meaning if the general purport had been grasped.

A most ineffective method sometimes noticed in inexperienced teachers of literature is to make, as it were, a dictionary of the unknown words occurring in the passage to be read, before the pupils have made any attempt to study the passage.

The Gestalt psychologists of the Wertheimer school have something to teach us here. They maintain that the part out of relation with the whole is something in its nature different from what it is when in organic

relation with the whole* ; one has only to attempt to translate a passage into a foreign language by the help of a dictionary to realize that this is true of words. The meaning of words (and the significance of classical allusions, metaphors, analogies and so on) should be discussed (if discussed at all, and there is far too much discussion of such things in the writer's opinion, with junior pupils) after the passage has been read and its general meaning appreciated. The same might be said of art appreciation lectures. The writer has often heard lecturers discourse on the form of a symphony and on the instruments involved, before the schoolchildren who make up the audience can recognize, much less hum, the melodies which are the principal interest of the musically uneducated.

An art-master, to whom was being expounded the doctrine of Gestalt, demurred on grounds not unlike those of the trainer of teachers. His life, he said, was spent in making students see unities to which they were blind. They insisted on painting objects in a group as separate objects not as members of a whole pattern. He cited the case of a child of eight and a woman of forty-seven—each was engaged independently of the other in painting, for the first time, a rose. Each started by painting it *not* as a whole, but petal by petal, with a white rim outside each painted petal to prevent the colours running.

A theory of mind-structure should be able to explain the tendency to atomism exhibited almost universally by the teacher. The old association psychology gives a professedly adequate explanation, but the arguments, both of English and German psychologists of the nineteenth and twentieth centuries seem effectively to have exploded these atomistic theories, so we must look for another explanation.

The suggestion that young teachers simply reproduce the methods by which they themselves were taught, and that text-books, and indeed the experienced teachers under whom they work, support them in this, has something in it. But not everything, for if the mind is naturally total working, one would have expected that a greater number of inexperienced teachers would regress to wholewise methods as being more primitive, rather than to the logical analysis encouraged in their own education.

The Gestalt psychologists of the Austrian school (a group of whom are sometimes referred to as the form quality school "*gestaltqualitat*") might be able to make out a case. These theorists see *Gestalten* as emergents, different from but rising out of their contributory parts. All students have had occasion to recognise something like this ; after

* See Köhler's experiments on this point in his *Gestalt Psychology*.

groping sometimes comes vision, but not all groping culminates so happily, and the length of the preliminary blindness varies with individual and subject. On this view, the teacher fresh from the university may not have had time to gain the vision of wholeness; he is still at the groping stage. That so many never get beyond it suggests either that the encrusting tendency of habit has done its worst, or that the average mental calibre of our school teachers is not very high.*

The Gestalt psychologists of the Berlin school (the unitarians) might offer an explanation on much the same lines. Their view is that "the whole with which they are concerned is something other than its parts, but only in the sense that *as* a whole allusion to parts is in the completest sense irrelevant"; "when there is a Gestalt there are no parts, when parts are designated there is no Gestalt."† But the unitarians do presumably recognize a period of preliminary groping which is clearly brought out in the behaviour of Köhler's problem-solving apes, and as clearly brought out, we suggest, by the young teacher.

It is possible with further experimentation on mental processes above perception that the difference between unitarians and binarians may vanish in smoke! At any rate, the latter would agree that the parts that condition the emergence of the whole are transfigured by that emergence, and so are, in that sense, not prior to the whole. Whether the mind makes the whole (the two-step theory) out of the parts, or achieves the whole (the one-step theory) by means of a physical-physiological mechanism (Köhler's hypothesis) is a metaphysical rather than a psychological question. The answer depends on our conception of the nature of mind and the nature of matter.

X.—SUMMARY.

(1) During the present century a group of psychologists in German-speaking countries has been occupied with the study of "Gestalten," a term variously translated as wholes, structures, forms, or configurations.

* Compare the view of the "binarians" with that of Bergson (see his *Creative Evolution*). Bergson's belief that intellect is concerned with analysis, and is essentially non-creative, and that "intuition" is the source of creative work, might account if sound for the absence of vision in the young teacher whose intellect at School and University has been stimulated at the expense of intuition.

† Ellis, *Gestalt Psychology and Meaning*.

N.B.—The artist, depicting a group of "still life," pencils the outline of the design, the contours of the several objects in so far as they do not form part of the design being of secondary interest; in achieving the whole he loses the parts. On the other hand, the tiro completes the contours of the several objects and finds that in joining the parts he has lost the whole.

(2) The theory is contrary to the doctrine of Associationism in that it holds that knowing does not come from a summation of sensations, but rather by insight into form or pattern. Mental response is to the whole, and the whole has properties over and above those of the parts.

(3) German psychologists divide on the question of parts. One group regard Gestalten as emergents resulting from a creative act of mind upon the contributory parts; the other school believes that the wholes are experienced as prior to and without reference to parts. This perhaps is an academic question which has little significance for the practice of teaching.

(4) Excellent experimental work has been done in support of Gestalttheorie, mainly in the field of visual perception, but also on memory and the rudimentary mental processes discoverable in infants, apes, and lower animals. (See Köhler's *Gestalt Psychology* and his *Mentality of Apes*, and Koffka's *The Growth of the Mind*. Köhler's physiological theory to account for Gestalten is hypothetical, but his views on the existence of and properties of Gestalten are based on experiment.

(5) The German workers on Gestalten have given scant recognition to the publication of the great English psychologists, Ward and Stout. These latter were well aware of the mind's capacity to apprehend wholes immediately and to react to pattern or form. This neglect may be due to the fact that Ward and Stout relied for their conclusions more on introspection than on experimentation, and retained in their vocabularies the terms attention and meaning, rejected by Gestalt psychologists. Henry Sturt in his *Principles of Understanding* indicated the application of "whole" methods to teaching.

(6) English experimental psychologists such as Myers and Valentine have suggested experiments designed to test the relative efficacy of the "whole" and "part" method of learning. An insufficient number of such experiments with their results have been published. Experiments on memory and reading indicate, under certain conditions, the superiority of "whole" over "part" methods.

(7) The paper gives a brief indication of methods of teaching school subjects, based on the conception that "at any given moment we have a certain whole of presentation," and concludes with the noting of the young teacher's preference for "part" methods and the bearing of this on certain theories of mind structure.

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RÉSUMÉ.

LA THÉORIE DE LA FORME (GESTALT): SON IMPORTANCE DANS L'ENSEIGNEMENT.

Cette étude donne un compte-rendu critique des théories de la psychologie de "Forme" d'après les deux écoles principales de philosophie, et de quelques-uns des témoignages expérimentaux sur lesquels se basent ces théories. On marque pourtant le fait que les travailleurs allemands ne reconnaissent guère les publications des deux grands psychologues anglais, Ward et Stout. Ces derniers connaissaient cependant bien la capacité de l'intelligence à saisir immédiatement un ensemble, et à réagir vis à vis d'un dessin ou d'une forme. On peut attribuer cette omission au fait que Ward et Stout tirèrent leurs conclusions de l'introspection plutôt que de l'expérimentation et qu'ils inclurent dans leur vocabulaire les termes "attention" et "signification," que rejettent les psychologues de "Forme." Henry Sturt dans ses "Principes de la Compréhension" indiqua l'application de méthodes "globales" à l'enseignement.

Des psychologues anglais expérimentaux, comme Myers et Valentine, ont proposé des expériences destinées à démontrer l'efficacité relative de la méthode "globale" et de la "partielle" pour apprendre quelque chose.

L'étude se termine par une indication brève des méthodes de l'enseignement des branches scolaires, basées sur la notion que "à un moment donné nous avons toujours un certain ensemble de présentation."

ÜBERSICHT.

GESTALTPSYCHOLOGIE: BEDEUTUNG FÜR DEN UNTERRICHT.

Diese Abhandlung beurteilt kritisch die Psychologie der „Gestalt“ und deren beiden Schulen, auch etwas von dem experimentellen Beweis, worauf sie zum Teile basiert. Darauf wird hingewiesen, dass die deutschen Bearbeiter der Gestalten die Werke der grossen englischen Psychologen, Ward und Stout kaum anerkannt haben. Diese wussten sehr gut von der geistigen Fähigkeit, Ganzheiten sofort wahrzunehmen und auf das Gebild zu reagieren. Man kann diese geringschätzende Behandlung der Tatsache zuschreiben, dass Ward und Stout sich für ihre Schlüsse mehr auf Introspektion verliessen als auf Experimente und die von Gestaltpsychologen verworfenen Bezeichnungen „attention“ (Aufmerksamkeit) und meaning“ (Bedeutung) in ihren Wortschätzen behielten. Henry Sturt wies in seinen „Principles of Understanding“ auf die Anwendung der Ganzlernmethoden auf den Unterricht.

Englische experimentelle Psychologen wie z. B., Myers und Valentine haben Experimente vorgeschlagen, die bestimmt sind, die relative Wirksamkeit der Ganz- und Teillernmethoden zu prüfen. Man hat eine ungenügende Anzahl solcher Experimente samt ihren Resultaten veröffentlicht. Experimente zwecks Erinnerung und Lesen zeigen, dass die Ganzlernmethode der Teillernmethode unter gewissen Bedingungen überlegen ist.

Die Abhandlung schliesst mit einer kurzen Besprechung von Unterrichtsmethoden in der Schule, die auf dem Begriff basieren, dass „wir in irgend einem gegebenem Augenblick eine gewisse Ganzheit der Vorstellung haben.“

CHILDREN'S MISCONCEPTIONS CONCERNING THE SYMBOLS FOR MATHEMATICAL EQUALITY.

By E. M. RENWICK.

- I.—*Children's habit of treating the "=" sign as a symbol of distinction.*
- II.—*Results of tests on meaning of "=" sign.*
- III.—*Interpretation of certain results.*
- IV.—*Difficulty in using the word "equal."*
- V.—*Summary of results and conclusions.*

I.—CHILDREN'S HABIT OF TREATING THE "=" SIGN AS A SYMBOL OF DISTINCTION.

ONE of the commonest faults in children's statements of an argument in arithmetic is the misuse of the sign of equality. The following examples of statements by children between ten and twelve years of age are typical:

- (1) $\pounds 2 \times 7 = \pounds 14 - 3\frac{1}{2}\text{d.} = \pounds 13\ 19\text{s. } 8\frac{1}{2}\text{d.}$
- (2) $8 \div 2 = 4\text{ ins.} \times 6 = 24\text{ sq. ins.}$
- (3) $\frac{2}{3}\text{ of } 3\frac{1}{2} - \frac{3}{4}\text{ of } 1\frac{1}{2} = \frac{2}{3} \times \frac{7}{2} - \frac{3}{4} \times \frac{3}{2} = \frac{7}{3} - \frac{9}{8} = \frac{21}{8} - \frac{9}{8} = 2\frac{1}{2} - 1\frac{1}{4} = 1\frac{1}{4}, \text{ etc.}$
- (4) $\pounds 7 \times 3 = 21\text{ days.}$ (5) $201 \div 3 = 3)201$

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A study of these and numerous other instances suggests that children regard the sign of equality as a symbol of *distinction* rather than as a connecting link bringing into relation two expressions which are numerically or quantitatively equivalent: its function, to the child mind, would appear to be to separate rather than to bridge.*

The question is well worth investigating, owing both to the widespread occurrence of the misconception, and to the fact that the notion is of great importance in the early stages of the study of algebra, when equations are apt to lose all meaning if the pupil cannot conceive an expression as a unity and an equals-sign as something more than a punctuation mark.

The sign "=" is used first by young children in connection with addition and multiplication tables. It is not surprising that at this stage the full meaning of the symbol is not grasped; what is surprising

*The misconception is not unknown among educated adults, as the following extract from a modern book on heredity testifies:

$(44 - 30)^2 = 14^2 = 196 \times 2 = 392.$

$(44 - 34)^2 = 10^2 = 100 \times 7 = 700, \text{ etc.}$

is that the implications of the statements met with in text-books on arithmetic do not become clear to the child as he grows older and gains experience. Misconceptions exist even among intelligent secondary school pupils of thirteen, as the results of the following tests indicate.

II.—RESULTS OF TESTS ON MEANING OF “=” SIGN.

The tests were set to four groups of girls, viz. :

Class A.—29 girls, average age 10 years 11 months, ages ranging from 8 years 11 months to 13 years, and including 16 girls over 11.

Class B.—32 girls of medium ability, average age 11 years 8 months.

Class C.—34 girls classified as of superior intelligence, average age 13 years.

Class D.—26 girls, of whom about half were very weak in mathematics, average age 14 years.

The girls considered ten statements, of which a selection is given below with a tabulated record of the pupils' answers. (A dash indicates that the class did not consider the statement.) The following instructions were given in each case :

Notice these statements. If you think that the “=” sign is used correctly throughout, write “Yes” : if you think it is used wrongly in any part of the statement, write “No.”

| STATEMENT. | NUMBER OF CORRECT ANSWERS. | | | |
|---|----------------------------|-------------------------|-------------------------|-------------------------|
| | <i>Class A</i> (29). | <i>Class B</i> (32). | <i>Class C</i> (34). | <i>Class D</i> (26). |
| (1) $17 \times 2 = 30 + 4$ | 13 | 23 | 34 | 22 |
| (2) $12 + 2 = 14 \div 2 = 7$ | 9 | 19 | 32 | 22 |
| (3) $6d. \times 2 = 1/-$ | 27 | 31 | 34 | 25 |
| (4) $\pounds 1 \times 20 = 20/-$ | 15 | 30 | 31 | 22 |
| (5) $13 - 4 = 18 \div 2 = 9$ | 11 | 18 | 28 | 21 |
| (6) $26 \div 2 = 2 \overline{)26}$ | 8 | 6 | 8 | 1 |
| (7) $6 + 2 + 1 = 8 + 1 = 9$ | 16 | — | — | — |
| (8) $2 \times 4 \times 3 = 8 \times 3$ | 13 | — | — | — |
| (9) $7\frac{1}{2} - 4\frac{1}{8} = \frac{1}{8} - \frac{1}{8} = \frac{1}{8} = 3\frac{1}{8}$.. | — | 25 | 28 | 14 |
| (10) $\frac{1}{4}$ of $12 = \frac{1}{3}$ of $9 = 3$ | — | 32 | 29 | 24 |

III.—INTERPRETATION OF CERTAIN RESULTS.

Classes *B* and *C* weighed their decisions very carefully, some of the girls going over their answers two or three times, making alterations and erasures, and appearing to find the task difficult. There were in spite of this, inconsistencies in the decisions of a few of the best girls, and this fact serves to emphasize the indefiniteness and want of clearness of their ideas.

In Class *D*, which contained the older and weaker pupils, there was a certain amount of answering at random, while in the lowest Class, *A*, although some preliminary explanation was given by the teacher, the decisions were largely the result of guessing. This class produced only two papers containing no inconsistencies; of these papers one was written by a child of $10\frac{1}{2}$, Helen, who considered every answer with care. Helen's I.Q., according to tests carried out some months before, is 138, and she is a very reliable worker, so that her misconceptions may be regarded as affording evidence of the point of view of the ordinary child of eleven or twelve. She decided as follows:

Correct:

$$12+2=14\div 2=7.$$

$$\begin{array}{r} 26\div 2=2)26 \\ \underline{13} \end{array}$$

Incorrect:

$$17\times 2=30+4.$$

$$13-4=18\div 2=9.$$

$$6+2+1=8+1=9.$$

$$2\times 4\times 3=8\times 3.$$

It seems clear that *she could not conceive a mathematical expression as a unity*; to her, it was not a number but an instruction. Her "correct" statement is correct because the instructions in it have been carried out—the 2 has been added to the 12, the 14 has been divided by the 2. In her "incorrect" statements, some of the instructions have been ignored, hence their rejection.

It is remarkable that children of ten years can conceive any number, however great, written in the Arabic notation, as a unity, yet some cannot conceive a vulgar fraction or an expression containing a symbol of operation as a simple number. They are in the habit of translating these symbols into verbs in the imperative mood; thus " $28+23$ " is rendered as "28 add 23," " $26\div 2$ " as "26 divide by 2." Even when the words "plus" and "minus" are used, they function as verbs, for example, "I plussed the two numbers together." "Minus 2 from both sides of the equation." When these children are first introduced to statements like " $7+2=3\times 3$," they ask: "Needn't we put the answer?" and are astonished and incredulous when told that the "answer" is not necessary.

The two questions following, which have been asked by children in another connection, illustrate their inability to think of an expression as a number :

- (1) Pupil, aged 11, " The sum is, ' How many sevens in $400 - 1$? ' Does that mean take 1 from 400 and then find how many sevens in 399, or find how many sevens in 400 and then take away 1 ? "
- (2) Pupil, aged 10, examining the statements :

10 men can do the work in 16 days.

\therefore 5 men can do the work in 16×2 days.

" It seems funny to put a multiplication sum in the middle."

Teacher : " The 16×2 stands for the number you get by multiplying 16 by 2."

Pupil : " Well, may I put the number ? "

Another pupil of about 11 years of age, studying factors, was unwilling to write $3 \times 5 \times 2$, though she had arranged her counters correctly in illustration of this continued product, and had written 3×5 ; her unwillingness to add " $\times 2$ " to " 3×5 " is an indication that she could not treat " 3×5 " as a number.

The present writer is in the habit of introducing to her pupils the ordinary conception of an expression by setting an exercise in which they are required to insert in an equation the symbols of operation thus :

$$17 \wedge 2 = 5 \wedge 3$$

$$17 - 2 = 5 \times 3$$

The statements always provoke a protest : " $17 - 2$ is 15 and you have written 5 !" The children regard this use of the sign as unnatural. Their habit is to write down expressions, conceived as instructions, *in the order in which they arise in the mind*. For example, a simple problem which is solved by means of the series of calculations :

$$10 \times 2 = 20, \quad 20 - 4 = 16, \quad 16 \div 8 = 2$$

is explained in writing by the child thus :

$$(a) \quad 10 \times 2 = 20 - 4 = 16 \div 8 = 2 \text{ nuts each.}$$

Or

$$(b) \quad 10$$

$$\quad 2$$

$$\hline 20$$

$$\quad 4$$

$$\hline 8 \overline{)16}$$

2 nuts each.

where (a) and (b) are looked upon as equivalent modes of stating the argument.

In this connection it is interesting to note the following extract* from an American arithmetic book, *The Columbian Arithmetician*, published in 1811 :

$$1+6,=7,\times 6=42,\div 2=21.$$

The suggestion that commas should be inserted in this way was once made to the writer by a pupil of about twelve years of age. Her criticism arose in the course of a discussion as to the correctness of a sequence similar to " $12+2=14\div 2=7$ "; every other girl in the class considered the sequence to be correct as it stood.

Instances of slipshod uses of the sign occur fairly frequently in modern text-books. It is common to find printed such statements as "1 ball costs $18s.\div 12=1s. 6d.$ " This statement, which appears in a popular text-book is a composite sentence obtained by running together the two statements: "1 ball costs $18s.\div 12$ " and " $18s.\div 12=1s. 6d.$ " It will be seen to bear a close resemblance to the statement " $12+2=14\div 2=7$," which the children classed as correct, believing that " $12+2=14$ " and " $14\div 2=7$ " could be combined to form a single statement. The writer of the book referred to takes the trouble, on another page, to warn pupils that,

"It is wrong to say, $area=3 ft.\times 5 ft.$

It is right to say, $area=(3\times 5) sq. ft.$ "

He is obviously a purist where some forms of statement are concerned. It is a pity that such writers do not extend the same care to the use of the simplest symbols, where any looseness in composition is liable to be reflected in the concepts developed by the pupils as a result of reading the book.

A statement similar to " $26\div 2=2$) $\overline{26}$ " is also to be found in a

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text-book which enjoys a wide vogue. If this use of the "=" sign is allowed, there is nothing to prevent its being used, as it frequently is used by children, thus:

$$\begin{array}{r} (1) \quad 729 \div 23 = \\ 23 \overline{)729} (31 = Ans. \\ \underline{69} \\ 39 \\ \underline{23} \\ 16 \end{array}$$

$$\begin{array}{r} (2) \quad 191 \times 17 = \\ 191 \\ \underline{17} \\ 1910 \\ 1337 \\ \underline{3247} = Ans. \end{array}$$

*Quoted by Cajori: *A History of Mathematical Notations*, Vol. I, p. 307.

The fact that the great majority of the pupils tested considered " $26 \div 2 = 2 \overline{)26}$ " to be correct, shows that they gave to the term

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"mathematical expression" too wide a connotation.

With reference to the two statements concerning quantitative equivalence, experience shows that it is not unusual to find " $\pounds 1 \times 20 = \pounds 20$ " and " $\pounds 1 \times 20 = 20$ shillings" both accepted by a child, on the ground that everyone knows what is meant, and the objector is merely quibbling. If marks are deducted for such misstatements, children are sometimes indignant, as they consider that they have been unjustly treated.

The tendency to write down expressions in the order in which they are evaluated is well illustrated by the statement " $7\frac{3}{4} - 4\frac{1}{8} = \frac{6}{8} - \frac{1}{8} = \frac{5}{8} = 3\frac{5}{8}$," which was adjudged correct by some of the best girls in Classes C and D. There is no doubt that children regard this use of the "=" sign as legitimate, the two middle expressions being, as it were, placed in parenthesis by means of the signs separating them from the end expressions.

An examination of the decisions in Classes C and D reveals the fact that eleven of these girls considered " $13 - 4 = 18 \div 2 = 9$ " to be untrue, while eight thought that " $12 + 2 = 14 \div 2 = 7$ " was true. The misconception of their earlier years had therefore persisted, in spite of the fact that these girls had studied simple equations, the school course having included algebra, for one year in the case of Class C, and for two years in the case of Class D. All the girls could solve simple equations. Obviously their skill had been acquired as any mechanical skill is acquired, by imitation and practice. It is inconceivable that pupils who do not understand a statement that one expression is numerically equal to another can have understood the logical bases of the process of solving an equation. Their skill was due to the circumstance that they could interpret and apply certain rules. There are many children who learn mathematics in this fashion.

IV.—DIFFICULTY IN USING THE WORD "EQUAL."

This difficulty is observable in girls of twelve and thirteen years of age. Their uncertainty as to the meaning of the word may be inferred both from the reluctance to use it which some girls exhibit, and from the tendency on the part of others to regard it as interchangeable with "same" or "alike."

Beginners in geometry sometimes need help in interpreting the

simplest of statements. In illustration, two questions asked by intelligent girls of twelve may be quoted. The questions, which had reference to an isosceles triangle with the datum $AB=AC$, were as follows:

- (1) Does it mean that from A to B is the same as from A to C ?
- (2) Does it mean that the *length* of this line is the same as the length of that one?

Many of those who do not ask such questions, believing that they know what is meant, apparently assimilate the meaning of "equal" to that of the familiar word "same," and consequently fall into the error of using it to describe any kind of resemblance; thus they speak of "equal shapes," "equal directions," "equal colours." The quantitative concept seems to develop very slowly, as the results recorded below indicate.

A.—The first set of answers, by girls of twelve, appeared in connection with the following examination question:

Draw an equilateral triangle ABC , sides 3 inches long. Bisect the angle ACB . Continue the bisector until it cuts AB at D . Continue CA to X and BA to Y .

Write a sentence about each of the following. (The word "same" must NOT be used):

- (a) Length of DA compared with length of DB .
 - (b) Length of BC compared with length of DA .
 - (c) Size of angle ABC compared with size of angle ACD .
- Five other relations were given.

In spite of the prohibition, eight girls used the word "same," in some cases incorrectly. Some of these answers are quoted:

$\angle ABC = 60^\circ$, $\angle ACB = 60^\circ$, so they are the same.

DA and DB both measure the same.

DA is the same length as that of DB .

DA compared with length of DB = the same.

The following are examples of answers in which an attempt was made to avoid using the word "equal":

The line DB is the exact size of the line DA , because we bisected the line BA .

The lines DA and BD are both $1\frac{1}{2}$ -ins.

The difference between $\angle XAY$ and $\angle BAC$ is none, they are both equal 60° .

DA is the exact length of DB . (Several wrote this.)

They are both alike in length.

They are both 60° in size.

Further examples are given to demonstrate the difficulty experienced by the children in composing their sentences :

- (1) $\angle KAY$ is equal with $\angle BAC$. (Two cases.)
- (2) $\angle BAC$ and $\angle B$ and $\angle ACB$ are just equal.
- (3) They are both of equal size.
- (4) The length of DA compared with the length of DB is equal.
- (5) The length of DA compared with the length of DB are both of equal lengths. (Several similar to 4 and 5.)
- (6) They are both equal. (A common phrase.)
- (7) $\angle XAY$ is equal to that of $\angle BAC$.
- (8) The size of the angle ADC is equal to the angle ACD .

Only one girl out of the thirty-two wrote simply : " DA and DB are equal," though in oral work the teacher was accustomed to use statements of this kind.

B.—The second group of answers was given by a class of thirty-three girls of superior intelligence, aged about thirteen years. The answers were recorded in the course of a lesson which was given with the definite purpose of encouraging the girls to select their words with more care. They were told that it was wrong to say " $\angle ABC$ is the same as $\angle ACB$," but they were not asked to reflect upon or analyse the meanings of the words "same" and "equal."

The teacher wrote on the blackboard the illustrative example :

A is just as heavy as B : $\left\{ \begin{array}{l} A's \text{ weight is equal to } B's. \\ A \text{ and } B \text{ are equally heavy.} \end{array} \right.$
 $A's$ weight is the same as $B's$.

The girls were told that various sentences would be given to them and that they would be expected to reconstruct these sentences, using the word "equal" (or "equally") in one reconstructed sentence, if it could be introduced legitimately, and the word "same" in another, with the same proviso. Some of the given sentences had no close relation to their exercises in mathematics ; they were included in the test because they provided examples of conventional uses of the words with which it was desired that the pupils should become familiar. In the following account each given sentence is followed by samples of the children's attempts to reconstruct it, illustrating the difficulty they experienced in choosing between singular and plural, nouns and verbs, in inserting suitable prepositions and conjunctions, and in selecting the appropriate word by which to express the particular type of similarity concerned in the comparison.

(1) A is just as clever as B .

A is equally clever to B .

A is as equally clever as B .

$A's$ cleverness is the same as $B's$.

(Two cases.)

The different renderings of the first sentence were discussed here, their correctness being assessed according to literary standards.

- (2) The field is just as big as the paddock.

("Area" used by one girl only).
The field is the same as the paddock.
The size of the field and that of the paddock is equal.

- (3) Park Road runs due east and Grange Road also runs due east.

Park Road and Grange Road run equally.
Park Road and Grange Road are in equal directions.

- (4) There are just as many pens as there are pencils.

The pens and pencils are equally numbered.
The pens and pencils have the same numbers.
The amount of the pens and pencils is equal.
The pens and pencils are of equal quantity.
The number of pens and pencils is equal.
The number of pens and pencils are equal.
The number of pens are equal to the number of pencils.

- (5) *A* runs as fast as *B*.

A runs equally as fast as *B*.

- (6) *A* takes just as long to do it as *B* does.

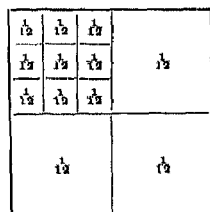
A and *B* take equally as long to do it.

- (7) *A* is egg-shaped and *B* is egg-shaped.

A and *B* are equal in shape.*
(Several).
A and *B* are equally egg-shaped.
A and *B*'s shapes are equal.
A's shape is equal to that of *B*'s.

*This throws some light on the mistake of a child of ten who, when asked to divide a square into twelve equal parts, drew the accompanying figure.

This type of mistake is unusual.



- | | |
|--|--|
| (8) <i>A</i> is 9-in. high and <i>B</i> is 9-in. high. | The height of <i>A</i> and <i>B</i> are equal. <i>A</i> and <i>B</i> are equally as high. |
| (9) The cup is just as hot as the plate. | (Word "temperature" suggested by a pupil.) The cup is equal in temperature as the plate. |
| (10) <i>A</i> is blue and <i>B</i> is also blue. | <i>A</i> and <i>B</i> are equally blue. <i>A</i> and <i>B</i> are equally coloured. |
| (11) <i>A</i> is just as good as <i>B</i> . | <i>A</i> has the same goodness as <i>B</i> . <i>B</i> 's goodness is the same as <i>A</i> 's. <i>A</i> is of the same goodness as <i>B</i> . |

Other sentences dealt with lengths of lines, sizes of angles, capacities of vessels and volumes of solids. The mistakes made were similar to those recorded above. The girls were attempting to make use of words which had not yet become incorporated in their working vocabulary; their uncertainty and diffidence were just as evident in this exercise as in the test on the use of the mathematical symbol.

V.—SUMMARY OF RESULTS AND CONCLUSIONS.

- (1) Among children of ten to twelve years of age there are many who find unintelligible a statement that one numerical expression is equal to another. This appears to be due to the fact that their early training in arithmetic leads them to look upon any symbol of operation as an imperative, and this prevents them from conceiving a numerical expression as a unity. They use the "=" sign simply to separate an expression from its "answer."
- (2) Failure to assign a meaning to the symbol "=" has its correlative in failure to use correctly the word "equal," the meaning of which tends to become assimilated to that of "same." This is made evident when :
 - (a) the word is avoided, "alike" or "same" being substituted for it in formulating comparisons of equal quantities,
 - (b) it is used in describing resemblances where neither degree nor quantity is involved.

Résumé.LES CONCEPTIONS ERRONÉES CHEZ LES ENFANTS EN CE QUI
CONCERNE LES SYMBOLES MATHÉMATIQUES.

On voulut s'informer de la raison pour laquelle les enfants emploient habituellement d'une façon erronée le signe de l'égalité. Dans ce but on fit subir de courtes épreuves à une centaine de jeunes filles, âgées de neuf à quinze ans.

Les résultats indiquent que la méthode d'enseigner l'arithmétique avait amené beaucoup des élèves à se tromper sur la fonction du signe " $=$ " d'abord elles avaient considéré comme un commandement toute indication d'une opération, ce qui les avait empêchées de reconnaître comme formant une unité toute expression contenant une telle indication ; ensuite elles avaient adopté le signe " $=$ " comme un expédient pour séparer une expression de sa "réponse." De cela il s'ensuit que des affirmations qu'une expression en égalait une autre, étaient pour elles inintelligibles.

D'autres témoignages que l'emploi fréquent du signe " $=$ " n'avait produit chez elles aucune conception nette de sa signification furent fournis par le fait que les jeunes filles se trouvaient incapables d'incorporer dans des phrases le mot "égal," dont la signification montrait une tendance à s'assimiler à celle du mot "même."

ÜBERSICHT.FALSCHES AUFFASSUNG BEI KINDERN VON DEN SYMBOLEN FÜR
MATHEMATISCHE GLEICHHEIT.

Man wollte feststellen, warum Kinder gewöhnlich das Gleichheitszeichen falsch gebrauchen. Zu diesem Zweck wurden kurze Tests an etwa 100 Mädchen von 9-15 Jahren gegeben.

Die Ergebnisse wiesen darauf hin, dass die Übung im Rechnen viele der Kinder veranlasst hatte, die Rolle des „ $=$ “ Zeichens falsch aufzufassen. Erstens waren sie dahin gekommen, schon irgendein Zeichen des mathematischen Hergangs als Aufforderung aufzufassen, und das hatte sie verhindert, einen Ausdruck von einer „Antwort“ zu trennen. Daher leuchtete ihnen die Behauptung nicht ein, dass ein Ausdruck dem anderen gleich sei. Einen weiteren Beweis dafür, dass die Bekanntschaft mit dem „ $=$ “ Zeichen zu keinem klaren Erfassen seiner Bedeutung geführt hatte, gibt die Tatsache, dass die Mädchen mit dem Worte „gleich“ keine Sätze bilden konnten, sondern vielmehr dahin neigten, das Wort „dasselbe“ dafür zu nehmen.

SOME NOTES ON THE INCIDENCE OF NEUROTIC DIFFICULTIES IN YOUNG CHILDREN.

BY SUSAN ISAACS.

PART II.*

FURTHER ILLUSTRATIVE MATERIAL.

1.—*Difficult children (mainly in relation to authority).*

"It is of three-year-old Isabelle I write. Lately she has taken a delight in doing all the things she knows are naughty, such as jumping on the bed (which she helps me to make), playing with things she knows perfectly well she ought not to touch, such as baby's teats, standing on a chair to reach them. She insists on drinking her bath water. In fact her whole day is spent in this way, which is very unhappy for all of us. Peter, nineteen months, is a very lovable chap. Isabelle simply will not play with him and snatches all his playthings from him. He has been very good about this, looking round for another toy, only to have that snatched away from him also. It is only recently he has begun to protest. He loves Isabelle in spite of all this, but when he hugs her, or wants to kiss her, she frowningly pushes him away, pinches him or gives him such a violent push so that he falls."

"My little charge, aged four and a quarter, is a highly strung nervous child. I find fault as little as possible, but when she has to be corrected she has a most puzzling way of behaving; for instance—if I tell her in a very serious voice I am very displeased, she will come to me a few minutes afterwards and say, 'It is not nice of you to speak to me like that, now I am very displeased and shall not smile or talk to you, you see you have made me displeased and I am looking very cross.'"

"No matter what you ask J. (aged 5 : 6) to do the first thing which comes to his lips is 'No.' Any treat you propose, anything he especially likes offered him at table, produces an instant 'Don't want it.' We always suggest things to him as if we knew he meant to accept and cheerfully, but the answer is always in the negative. We have tried taking no notice of his refusals, but he persists in refusing until we say, 'Oh! very well, you don't want it.' Then he says he does and cries bitterly if the cake or whatever was offered him is removed. If it is then handed to him he will again say he doesn't want it and this may go on several times, when finally it is removed for good. Sometimes when he fears he is really losing it he will give in and accept it sooner."

"For some reason, the boy, aged 6, has a great dislike for his mother and does not hesitate to say so, besides which he is troublesome whenever with her. He seems to be no trouble with the nurse. The child has a habit of stammering."

*Part I. appeared in this JOURNAL, Vol. II., Pt. I., February, 1932.

"Can you suggest a treatment for stormy crying of a boy of seven and a half, who has always been a 'cry-baby.' If a sum gives him any trouble or he happens to be in the mood, he either cries and bellows with rage or lays down his pencil and states that he does not want to do it and then cries. The crying is intense, not just a few tears and done with, but roaring sobs, and he upsets himself to such an extent that his brain is too muddled for work afterwards. I must add that it is not a new kind of sum which causes this trouble, but more often than not, is a familiar type, and possibly one that he has done quickly and correctly before. He is never scolded if a simple mistake is made, as his governess realizes that everyone makes mistakes; nevertheless, the pointing out of a slip by her is enough to start the same flood of tears, and consequent upset; in fact he cannot bear to be wrong and yet will not try hard enough to be right. Lessons are not the only cause for this obstinate temper. He sometimes refuses to give any reply to a simple question which his elder or younger brother put to him. This also ends in a very few minutes in bellowing rage, not from any action on the brother's part, except possibly signs of exasperation, but I suppose just a helpless feeling of being unable to keep silence. He is also a poor sport, and cannot take even a mild bit of ragging or teasing in good part and yet teases his younger brother himself unmercifully in a sly fashion, waiting until he thinks the governess is out of earshot. We do not punish more often than we can help, but bad behaviour at dinner after two or three warnings means no sweets afterwards. His younger brother, aged four and a half, will take this occasional deprivation like the little 'sport' he is, watching the others eating their sweets, without sulking, or protesting, or asking the reasons for the veto—he knows quite well, and accepts it. Alas! the seven-year-old will bellow first with pure rage, plead for a pardon for a long time, and feel and show that he is resentful of a rule which is inflexible. It sounds rather as if I have done nothing but enumerate his faults, but he is an affectionate child, generous and kind-hearted, friendly, and with excellent manners."

"I should be grateful for advice as to how to treat my charge, a boy of eight and a half. The slightest thing that goes wrong in his play or lessons daunts him. 'Of course it would be me—it always is,' is his reply, said as insolently as possible, when told about anything. His younger brother is much more clever and charming than he is, but we take great pains not to let him know this—though outsiders are often tactless on the subject. I encourage and praise him at every opportunity and overlook many faults which I would not in his younger brother, rather than reprimand him or punish him, for sometimes only the slightest hint of criticism will make him lose heart—or else he will be very rude to me and sulk for hours."

2.—*Fears, night terrors and anxiety.*

"She (aged 2 : 0) will wake in the middle of the night and say, 'No lie down,' 'No lie down,' so I say, 'All right, try sitting up for a little while.'" She says, 'No sit up.'" I then suggest she should lie down and am again met with refusal. She does not want to sit, or stand, or lie. Sometimes I take no notice whatever and presently she'll work herself into a fever by crying and screaming. Sometimes during the day she will ask to get on my lap

so I lift her up and she immediately stiffens and refuses to sit, so I put her down and she crumples up in a heap on the floor begging me to take her on my lap. I lift her again and she stiffens and shrieks. She will ask for a special toy, or cake, etc., etc., and then refuses it when it is given to her."

"There are some things which affect him (aged 2 : 4) so deeply that every scrap of colour drains away from his face and his whole attitude is one of fear. The first occasion upon which I noticed this was when he was sixteen months old—and he saw the working advertisement of a certain motor tyre, a large object supposed to be a rubber man (about 9-ft. by 4-ft.) was flapping about on the back of a motor. D. made no noise, and I was alarmed at the sight of his white face (he is a clear rosy colour usually) and frightened eyes. It happened again a few days later when he picked up a magazine on the cover of which there was a picture of a 'witch doctor' in very lurid colouring. I did not attempt an explanation in either case—the things were too unnatural and grotesque—but simply diverted his attention into other channels. It has happened several times since when he has seen pictures of exaggerated figures, such as Mr. York of York chocolate fame, or tiny dwarf-like figures, the usual little nursery rhyme people."

"She (aged 2 : 8) suffers from nightmare—which must be intensely vivid, as spasms recur during the day. She frequently wakes in the night frantic and screeching because she fancies there are animals about the room and in her bed. All my efforts to reassure and pacify her are useless for a time—and when finally she ceases screaming, she keeps clutching at me, and will not go back in her bed. The trouble commenced about last August. She was sleeping in a cot in my bedroom. When I ran up to see what was wrong she was trying to climb out and seemed terror-stricken. Nothing would induce her to go back in the cot—she said 'An animal bite my feet,' although she has always been very fond of cats and dogs and cannot pass one without wanting to love it, in fact she shows great interest in all animals."

"He (aged nearly three) used to go to sleep quite happily as soon as he was put to bed, but now as soon as I leave him he calls me back 'Cos Goo-goo comes.' He doesn't seem very frightened of this imaginary creature, yet it keeps him awake, and he calls me again and again to tell me about 'Goo-goo.' At first I told him there was no such person when he said 'Goo-goo bites the windows all up, and bites the doors and bites everything,' but he *insists* that there is, so thinking that he might get worse fears through repressing it I encourage him to talk about it. I suggested Goo-goo was a little boy and little boys didn't bite windows, etc., only nice things like biscuits and apples. But that was no good. Then he called me in a more frightened voice and when I told him to shut his eyes and go to sleep he said, 'No, if I shut my eyes Goo-goo will come and eat me.'"

"For instance, when playing with his little sister in the garden on a grey day and the sun starts to break through; or if it is sunny and a cloud comes over the sun; or if there are huge low clouds hurrying in the sky, he will come running saying, 'Mummie, I can't stay in the garden any more, there's a cloud and I don't like it.'"

"She is now 3 : 5, but ever since twenty-one months she will not be left alone for a moment without screaming with fear, therefore, wherever I go from room to room and everywhere else she will go also. At bedtime

I stay with her until she is asleep and then steal away quietly, but when she awakens to find herself alone, as she does sometimes during the evening, she practically has hysterics. When I have reasoned with her she explains that she feels lonely and sad by herself, but that is all she will say."

"I often take her (aged 4 : 0) with me when I go shopping—and some days for no reason that she can give she absolutely refuses to leave the car—or if I get her out of the car to go into a certain shop or building, she screams and looks terrified and keeps repeating that she is tired and does not like a noise. Once I insisted and carried her screaming into a building and her teeth chattered for a little and then she was bright and quite happy again."

"When he (aged 4 : 0) was tiny if a biscuit was broken when given to him, he would want it 'mended,' and would lie on the floor kicking and yelling with misery and *nothing* would pacify him."

"The only time when he (aged 5 : 0) behaves really idiotically is when he has to take any medicine or patent food such as Roboleine or cod liver oil. He shrieks and shrieks and becomes quite hysterical, and the *only* way to get him to take it is to force it. He is just the same if he cuts himself at having a bandage put on (which of course does not hurt him) though, there again, after the first time, he does not mind having it dressed."

"I have a son (aged seven) who has a dread and hatred of anything grotesque or unnatural, and until he *knows how it works* he is terrified—but after the first time, and the explanation, he can see the same sight again, unmoved. The explanation, *alone*, is, insufficient. He could not endure to look at 'Mickey the Mouse' and his clever *unnatural* antics. And yesterday, when he saw his first Punch and Judy show, while younger children shrieked with laughter, he grew graver and graver, and finally burst into tears and said 'I hate it, I hate it.' I pointed out that he goes to another party this week where there will be a conjurer and probably a ventriloquist and that he must not go unless he could behave himself. He said quietly, 'I shan't cry. I saw one two years ago, and I cried then, but I never mind anything after the first time.'"

"She (aged ten) is very frightened of rain and running water. When we are out for a walk if she hears water running anywhere she will not pass it or go near the spot again."

3.—*Failures in cleanliness.*

"My baby son, aged ten and a half months, was first put on the chamber when I weaned him at the age of eight and a half months and he responded splendidly for one month. This last month, however, whenever he is put near the chamber he screams violently and however long I hold him gives no reaction but soils his napkins instead—afterwards."

"My boy baby, aged thirteen months, is rather a difficult child. In the nursing home they used to say ruefully he was born grumbling—and I must say he never was the sunny nature the elder girl was. He progressed normally until about two months, when he began to develop boils and eczema. His nurse kept him on the wrong diet, so I changed, and the next nurse brought him on till he was an entirely different baby. He always was a screamer and possessed unusual vocal power—amazing in a baby. At first of course, it was the inadequate feeding and then the boils. But now he is exceedingly

strong and big. And very healthy indeed. The trouble is that the moment he catches sight of the 'throne' he simply begins to bawl and refuses completely to do what is required, even to the point of defying us for an hour together when we all know that he must want to be clean very badly indeed; but he keeps it back and back—and there can be no trouble physically because immediately afterwards he presents us with a dirty nappy. All this is accompanied by shrieks of pure rage right from his stomach and I am afraid there is no question that it is pure defiance—with a bad temper. All other times he is fairly quiet and good. We have tried persuading him, coaxing, leaving him alone to do his 'duty' (this last is best, though it is intermittent, and after fourteen days of peace we'll have a week of screams), suggestion, and every type of 'throne' to meet with the situation. He has worn out three nurses who simply can't compete with the noise and temper, and we are dreadfully worried because we don't want to 'break' his temper, yet one *must* cure his temper, which is really violent. He absolutely kicks and hammers on the 'throne' table with anger and not a tear on his face. He started on the usual 'pot.' Then he could not be left by himself, even secured to a chair, as he kicked it from beneath him. We therefore made him a wooden polished square seat to cover it. He then kicked the throne one way and the pot the other, levering himself by the bedpost. We then mounted it on a sort of platform which by his own weight was unable to be moved. He then moved sideways and covered himself with the contents of the pot. Finally we made arms and a back to it and a movable tray in front of him which, when fixed, prevents him from getting his hands inside. His fury when he beheld this was almost funny. He now puts the energy he exerted physically before into his roars."

"From four to ten and a half months I never had a soiled napkin, then at that age we took him on holiday. From the first day he changed completely—refused to use a chamber, but stiffened and screamed every time he was held out. He waited till I had put a napkin on, then wet or soiled it, and has done so now for four and a half months, though I have always held him out as a matter of routine."

"My son, Peter (aged three), is in every appearance strong and well, although rather excitable. Every night he wets the bed, and wets his trousers during the day and frequently makes a mess in them also. I have tried all your suggestions to other people and some of my own, but am still completely in the dark as to the cause or how to cure. I might say that this dirtiness during the day is quite a new thing, as he has been clean for many months now."

"I have just taken my first post as nurse, to a little girl of three years. I find her very difficult as regards her daily motion, she does not say, 'I can't go,' she simply says, 'I won't go,' or 'I don't want to go.'"

"Once or twice in the week for nearly three or four weeks, he (aged 10:0) has wetted his bed; but worse still, he has the habit of doing it on the floor, and on a certain piece of furniture. We have tried every possible thing we can do; at last we have taken that piece of furniture away and for three nights he has been dry in the morning. His father asked him why he did not go to the W.C. and the boy replied that he didn't know he was doing it; he says, he 'does it in his dreams.'"

4.—*Thumb Sucking (and allied cases).*

"Robin (aged 1 : 10) is a strong, healthy child, full of happiness and vitality, but he developed an extraordinary habit some five months ago. When put down to sleep he turns on his tummy, bangs his head on the pillow for fifteen minutes or so without a pause; he does so with tremendous force and I feel very worried about it."

"My little girl of two and a half has a very odd and very trying habit. At night she lies on her 'tummy' and bumps her head hard on the pillow. She does it rhythmically and sometimes as many as a hundred times in succession, though usually it is about a dozen times I should think. Some nights she does this on and off all night, other nights she only does it two or three times, but I don't think she ever goes an entire night lying quite still."

"My little boy, aged four years, has a tiresome habit of 'head knocking.' The child croons loudly at the same time as he bangs his head violently on his pillow, and continues to do so at intervals during the night. Sometimes he is quite fast asleep at the time and sometimes half asleep."

"With a stick he (aged 7 : 9) will tap about at the floor or chairs if he has nothing better to do, or if he is talking to you. I have asked what he is thinking about, and it is usually of what he is going to be when he grows up or of his grandfather's big game hunting, etc., that he would like to do. I imagine he has formed this jiggling habit this way—a year ago in the summer he was allowed to play with the garden hose, which delights every child, and was allowed to help clean the car, etc. Then when it was too cold he had the hose in the house and would pretend to hose by the hour. He was a very solitary little boy then, no children near—I think he got into the habit of shaking the hose and so shakes sticks or whips now. He is very sensible otherwise and sits still when occupied or read to."

5.—*Feeding Problems.*

"He (aged 20 months) now cries when anything he wants very much is offered him and rolls on the floor in a paroxysm of rage. It is most extraordinary as he has never been teased or repressed in any way."

"My boy is twenty-one months and is thoroughly healthy and normal physically. Sleeps fourteen hours or so, is extremely intelligent and vivacious, but inordinately strong willed. We have had innumerable tussles with him of a more or less tempestuous nature but he has come smilingly through them all and has given in over every point except meals, and the latter are a nightmare. It started at fifteen months over tea time and has now spread to every meal. He would sooner go without rather than eat rusks, toast and bread and butter. About six weeks ago I tried starving him for twenty-four hours, after which for over a fortnight his meal times were a joy to us all and he put on twenty ounces. Since then he has relapsed again, first whined over his tea, messed it all up and had nothing, next, the same procedure over his breakfast and finally over his dinner. He loves his milk (one pint per day at most) and would eat porridge ad lib., or cake, but I will not allow that, and if he refuses or throws his rusks about I take all his food away and leave him without. By the next mealtime it is evident he is ravenous but has no intention of yielding and keeps himself going on a mug of milk. He will,

on the other hand, eat a huge quantity if he goes out to tea, but he will not do so at home whether Nanny or Daddy or I give him his tea. He is equally bad with any of us."

"My little boy is two years old, and until now has been quite normal in his habits. He has taken his meals regularly and although not voracious has eaten normally. One day a fortnight ago he began playing with his dinner, a thing he never does, and when I began to feed him he protested and wanted his pudding first. I really thought he was just being stupid and went on with his dinner, but he then spat it out, scattering it all over his chair, so I took it away and got his pudding but he also refused that, so we made no more fuss, and I realized or thought that he had had an aversion to his dinner on that day, and that perhaps I was unreasonable in persisting. However, at tea all was well and also at breakfast next day, but every day since he has refused dinner. For two days I just took him his dinner and he said, 'No, no,' so not wanting to sicken him I immediately removed it and he had his nap and nothing to eat until tea-time, and he didn't want anything to eat I could see. To-day, I thought I would try dinner again but as soon as he saw it he screamed and nothing would induce him to touch it. What am I to do? He isn't a bit spoilt."

"Directly any suggestion of food is mentioned or she (aged 2 : 3) sees the table being laid she whines and screams and declares she doesn't want any food. I have had the doctor in and he has given her tonics but they seem to have no effect. I have asked him to examine her throat as she usually seems to have trouble in swallowing, but he says there is nothing wrong. We have played with her, telling her stories, etc., with no effect. She takes an hour over her meal and usually heaves two or three times and sometimes ends in being sick."

"My little boy of 2 : 8 is a normal healthy child and very intelligent but has a terrible habit of retching and bringing up at meals when he has anything he doesn't like especially. I try to give him things he likes but it is very difficult as he has so many dislikes and one day he likes a thing and the next time he has it he won't."

7.—Masturbation.

"I came to her (aged 3 : 0) when she was eleven months and the first morning I put her into her pram to sleep I saw what was happening. For twelve months I took no notice of it, only in an indirect way—giving her an animal to hug, etc. This was all right for a night or two, then it was thrown overboard. She was very highly strung, excitable, irritable, very underweight, pale pinched face and very dark around the eyes. Wherever I went everyone said how ill the child looked. She also had no appetite and her nights were very bad. She would be awake for three or four hours night after night practising this habit. She has never been scolded or punished for it. The trouble got worse and worse. At the end of the first year I put her into splints. There was a marked improvement in a very short time—her appetite improved, her weight went up, she was altogether happier and everyone said what a change there was in the child. She slept the night through and with no wet bed. I kept them on for three months, then left them off and everything went well

for two months. Suddenly, I cannot think why, she started it again. I left her without taking any direct notice. Back she went at once to her old ways, you would not credit the difference in the child. I left the splints off for two months, and she looked just as ill as she did when I first saw her. She also lost weight both months. Again I returned to the splints and she is still wearing them. She asks for her 'long legs,' as she calls them, every night. She is now a picture of health, round, rosy, and as happy and busy as can be. She has gained two pounds in the last three months."

"As I have had my little girl of about four giggling in the night I am wondering if in the other cases it arises from the same cause, that is the sensation caused by 'touching' themselves in their private parts. My nurse had spoken of my little girl's laughing in her sleep, but as she is very a happy little person we thought it was dreams. While my nurse was away, however, she slept with me and I heard her do it, at the same time sucking her thumb. The sound seemed different from an ordinary laugh so I got out to inspect and found that was what it was—really half in her sleep."

"At night he (aged 5 : 0) wakes and does not go to sleep again for several hours, tossing and turning, and giggling to himself. He never knows what he is laughing at and just says, 'dreams.' He seems quite unable to stop and we have tried being kind as well as cross. Sometimes he has these giggling fits when he is resting in the day time."

9.—*Aggression.*

"Almost the first little definite action was to throw out her hands and scratch or tear at anyone nearest her. Now at the age of twelve and a half months she is worse than ever. If anyone happens to touch a toy in her possession she immediately flings out to claw at them and if she cannot reach will scratch at her own face. Scolding does no good but produces a scene of screaming and kicking. This is not only done when her temper is aroused, sometimes while happily loving someone and stroking their face she will suddenly pinch and claw them in a most spiteful way. I am always afraid of holding her too near another child for fear of them being hurt."

"Occasionally when friends have brought small children in, my boy (aged nearly three) smacks and pushes the little ones the whole of the time and will not let them share the toys, but will sit down and cry or do anything to be unpleasant. Even when out walking he will try and get near enough to push another little boy that we frequently meet."

10.—*Jealousy.*

"My little boy is one year ten months and his sister is nine months old. He was very unhappy at her arrival and used to try and pull her off my lap. Now he is on the whole very good—tries to protect her from 'bumps,' shares things with her, etc. But if he is tired or hurts himself at once he wants my exclusive attention. As I am often quite alone this is sometimes difficult and now he has a funny new trick. If anything goes wrong or the slightest word of censure he flops down and *crawls*. He has walked since he was ten months old and is particularly active and surefooted—can climb and run like a three-year-old."

"My little girl, aged one year ten months, has become very difficult to manage, owing I expect to jealousy, as she has a little brother of five months. At first she would hit him and start whining whenever I picked him up. I have not taken any notice of these fits, and never asked her to do anything for him, as I realized it only made her more angry. I am pleased to say this has been very effective as she now asks to tuck him in and mind him for me. She also offers him her toys, although she does not like parting with them. The real trouble now is that she absolutely refuses to have anything to do with strangers. If anyone says, 'Good morning' or speaks to her at all, her reply is nearly always a very definite 'No, don't' or 'No, won't.' She screams if they touch her or try to pick her up."

"I must write and tell you of my experience with this 'jealous hostility.' I took your advice and a month ago two little two-year-olds came to live with us as companions for my son of the same age. They looked so sweet together—all red cheeked, curly-haired, adored only children, but, unfortunately, *they hated each other*. I was in despair; I'd no idea babies could be so horrid to each other. We daren't leave them alone for a moment—such shrieks and yells would come from the nursery. They would pull each other's hair out by the handful—scratch, bite, push each other down, tread on each other. It was heart-breaking. I've seen chickens persecuting a lame fowl, almost pecking it to death. These babies were just little animals. If one fell and cried because of the bump the other two rushed over to pull his hair and increase the yells. 'Pip' loved to bang the others on the head with a brick."

"When the baby brother arrived and she (aged 3 : 0) saw him she said, 'Oh, what a nice baba.' She was amongst a number of aunts and uncles who adored her and, perhaps, she didn't realize the baby was mine. Then I had a very trying voyage, often having to neglect her and she became jealous and almost ill. She developed all sorts of fears and when we joined my husband in a bungalow in a wood she would not let me out of her sight. I was very careful with her and when we came here she seemed happier, but she would often lie awake for hours after being put to bed, talking to herself, etc. She always slept alone. The baby was restless, too. Then I thought I'd put the baby in with her and that worked miracles. She slept far better, although there was a chance of being disturbed during the night by the boy. I argued that probably when she was alone she always suspected that I was with the baby, whereas when he was in the room with her she knew I could not be nursing him."

"He is a very big boy for his age (3 : 3) and seems very healthy. He is very excitable. To give you an example. He was given a sink full of water and some corks to float. He rushed in full of fun to tell me about it and seeing the baby on my lap smacked her three times across the face. After the first smack I said, 'How very unkind,' and asked him why he did it. Without replying he did it twice more before I could ward him off. He will also hit her when I am not in the room."

"But it is his attitude to his little sister that worries me most. I cannot make him remember he is older or instil the smallest bit of the protective

attitude into him. He wants to be treated and to have everything she has and takes anything from her, often hitting her or knocking her over until I am really scared to leave them together. I may say she sticks up for herself well but there is three and a half years' difference. When talked to he is all affection and promises at once never to do it again, but not five minutes elapse before he is as bad as ever."

"My other difficulty is about the unkindness of the two elder ones (girl aged 6 : 6 and boy aged 5 : 6) to the child of three and a half. They have always resented her existence I know, though I tried to avoid making them jealous. They are devoted to each other and are quite kind to the baby, but Cecilia's life is really hardly worth living because they are so nasty to her. They tease her constantly by running off with her doll's blankets or knocking over her teacups or just by pushing her away (she is learning to tease, too) and also in more subtle ways by making her say foolish things and then jeering at her. She, poor thing, never remembers how she's been caught before and constantly gets caught again, and she is old enough now to mind considerably."

11.—*Temper.*

"She (aged 2 : 3) simply hates being dressed in the morning, having her hair brushed and face and hands washed. She fights and kicks and screams and bites."

"He (aged 2 : 10) screams and appears to go temporarily mad. As he went out of the door he stopped screaming and said, 'Now you won't like me.'"

"She is an only child, aged 3 : 6, fully developed, of normal and regular habits. The trouble at present is that she takes fits of crying without any obvious reason, accompanied by stamping of feet, and very often disobedience at these times. E.g., at lunch the other day she was asked whether she would have an apple or an orange. She chose the orange and then immediately changed her mind and wanted an apple, which, when handed to her, she refused and commenced crying and stamping her feet. Another example : she was playing in the garden with her doll's pram while I was cutting the grass. Suddenly she started crying—on being questioned as to what was wrong, had she fallen, or had anything frightened her, she refused to answer and continued to cry and scream for about an hour. Some time later on being questioned as to what was wrong, she told me she could not manage her pram on to the lawn. I tried to explain to her that if only she had asked I would have helped her, but she evaded my reasoning."

"The little girl (aged 4 : 0) seems, if anything, to get these hysterical fits more often than the little boy (aged 3 : 0), and I have seen her struggling to stop and yet unable to. Putting them in their cots alone does not seem to have much effect. They go on screaming until someone goes up and *helps* them, either by coaxing or smacking to calm down. The boy has more than once cried and screamed when put in his cot until he has made himself sick, when that has sobered him and he calls and tells me what has happened."

12.—*Excitability.*

"In the ordinary way she (aged fourteen months) understands almost all we say to her and will point out her dolly, her ball, the tick-tock, etc. But in her excited state she mixes them all up. Lately she has developed a sort of squealing cry when she is excited or angry which is very upsetting."

"All her (aged 3 : 6) actions (beyond playing calmly by herself) are excitable. When playing with her little friends she is all excitement—flings things about and screams loudly."

"He (aged 3 : 6) gets frequent fits of excitement, quite often for no apparent reason, when he seems almost 'beside himself.' He is a very sturdy child, and has greater strength than his sister. Consequently in these moods he is not only excessively rough but sometimes almost dangerous. Apart from that, it is extremely wearing to one's temper when he keeps hitting, or nearly hitting, with frequent accidents that do actually hurt. He is never intentionally cruel but in these excitable moods he just sets his teeth and 'goes for' anything."

14.—*Shyness.*

"She (aged 1 : 5) is terribly shy of all strangers and will cry if anyone looks or speaks to her and makes quite a face, turns her eyes upwards, etc."

"It's come to the stage now when she (aged 2 : 6) won't play with other children at all, she won't even speak to them, in fact she'll spend the whole evening without speaking when she's out, yet in her own house her tongue is never still. Even with people she sees every day, if they speak to her she'll hang her head and shut her mouth tight and look as cross as she possibly can. It's such a pity, because she's a lovely baby, and such a happy, jolly little thing with us. Anyone seeing her outside the house would think she was thoroughly ill-treated and cowed. She never laughs or joins in with the play, keeps entirely by herself, looking frightfully sad and miserable and disagreeable."

15.—*Destructiveness.*

"She (aged 2 : 6) plays in her cot for an hour in the afternoon, but whatever I give her to play with she now puts into her mouth. She'll eat up a whole book in an hour. She doesn't swallow the paper, but chews it up and spits it out, and what she doesn't chew she'll wilfully tear up. So although she loves picture books I can't let her have them. She'll take her hair ribbon off and chew that, or pull a button off her jumper and chew that."

18.—*Cruelty.*

"I do so want her (aged 2 : 4) to be kind and considerate to animals, but we have a dog and she is a positive little horror to him. He is devoted to her and most patient, but she really frightens him, either by pushing her wooden horse or doll's pram into him and after him, or by chasing him with something that squeaks (which he hates at all times) or by treading on his paws or prodding him with sticks. This wouldn't be so bad if she weren't serious about it, but she seems to take a fiendish delight in plaguing him."

21.—*Fixed Phantasy.*

"About six months ago she (aged 3 : 0) commenced pretending to be someone else, as I believe is common to most children and I always joined in the game. To begin with, the pretences lasted only a few minutes at a time—she would be 'Teddy's little mother,' then a 'Dadda,' then the 'postman,' and so on. Finally she was 'Dinkie,' who in real life is a neighbour's black cat and who oftens visits us. She has been 'Dinkie' now for about three months, and latterly will not answer to any other name. She curls up in a chair pretending to sleep, crawls on all fours, and comes to me to be stroked. The 'last straw' came this morning when she sat on the hearthrug licking her knees and said, 'Look at Dinkie cleaning himself.' I, by the way, have been named 'Tim,' who is another cat we see sometimes ! I used to welcome the real Dinkie's visits, showing her how to stroke him and treat him kindly. Latterly, however, I have been colder towards him, remarking that I 'don't care for cats about the house,' but this had no effect on the obsession. Do you think this is being carried to excess, and if so what can I do to alter things, please ? She is very good at amusing herself with her tea-set, building bricks, etc., but I notice that it is always the same idea—'Dinkie is going to give Tim a cup of tea,' 'See what a nice house Dinkie has made.' Till I almost wish I'd never heard the name. She gets annoyed at being called anything else, too."

For Summary of Conclusions, and Résumés see end of Part I.

A FALLACIOUS ARGUMENT IN EDUCATIONAL PSYCHOLOGY.

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IN 1921 an investigation was made at Columbia University into the relative values of the achievement test and the old type of examination.¹ The report on this investigation is the basis of a chapter in Dr. Ballard's invaluable book on achievement tests.² I have not been able to read the original report and what follows is based on Dr. Ballard's account. The investigation appears to have demonstrated conclusively the superiority of the achievement test, and it is not my intention to question this conclusion, which is sufficiently confirmed by later research. There is, however, one part of the argument which requires critical examination since it can be used in many problems connected with mental tests.

The argument is as follows: Generally it may be assumed that the average of different guesses at a magnitude is nearer the truth than any of the separate guesses. The instructor's estimate of his students' achievement and the estimate made by the old type examination are two such separate guesses. The correlation of the new examination result with the first of these was $\cdot620$ while that with the second was $\cdot654$. The mean of these two guesses was assumed to be a better estimate of the students' achievements than either taken separately. The correlation of the new examination with the mean of these was higher than that with either taken separately.

Similarly two estimates were obtained by two examiners marking independently the essay examination booklets. The correlation between these sets of marks was $\cdot663$. The correlations between the new examination and these two estimates were $\cdot599$ and $\cdot533$; with the average of the two it was $\cdot623$. Again it is found that the new examination appeared best when compared with the most trustworthy standard. This fact is treated as an argument in favour of the new examination.

So, indeed, it appears at first sight. But it must be remembered that Spearman has published a formula for the estimation of correlations of sums of magnitudes from the correlations of the magnitudes separately.³ For the simplest case in which one magnitude is correlated with the sum

of two others* (the standard deviations of those two being equal or having been equalized), this formula is :

$$r(a+b)c = \frac{r_{ac} + r_{bc}}{\sqrt{2(1+r_{ab})}}$$

Substituting the above figures in this formula we get :

$$r_N(O_1 + O_2) = \frac{.599 + .533}{\sqrt{2 \times 1.663}} = .62$$

in which N is the mark for the new examination and O_1 and O_2 are those for the old.

The correlation of the new examination with the mean of the two other estimates is thus mathematically determined by its correlation with the two measures taken separately and by the intercorrelation of the two measures themselves. If r_{ac} and r_{bc} are about equal, it will always be greater than either unless r_{ab} in the denominator is unity. The argument is guilty of the fallacy of trying to draw a conclusion as to fact from a mathematical identity. It establishes no more than what was already known : that $r_{O_1O_2}$ is less than one.

The fallacy of the argument may be further demonstrated by showing that it could also be used in favour of the old examination. That too will correlate better with the mean of two other estimates. We can apply this test to the correlation of the results of the old type of examination with the mean of two estimates of achievement by the new examination. Its correlation with the new examination is stated to be .654. The intercorrelation of two estimates by the new examination is .905. Assuming that .654 is the correlation of the old examination with each of these two estimates by the new examination, it follows from Spearman's formula that the correlation of the old examination result with the mean of the other two is .670. The old examination also shows up better against an improved standard.

It may be objected that the improvement in this case is less than in the other and that this is an argument in favour of the new examination. Of course it is. The superiority of the new examination is shown by the higher intercorrelation of its two independent measures. The greater increase in the correlation obtained by taking a mean of two independent measures with the old examination is due to the fact that $r_{O_1O_2} < r_{N_1N_2}$.†

*The correlation of a quantity with the mean of two others is, of course, the same as its correlation with their sum.

† $r_{O_1O_2}$ and $r_{N_1N_2}$ were not, in fact, obtained by the same method, but the result would have been the same if they had been, so this difference does not affect the argument.

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This fact is a valid argument in favour of the new type of examination. Nothing, however, is added to its force by its transformation into a relationship between correlations of averages.

BOOK REFERENCES.

- ¹ WOOD, B. D. : Report in *Educational Administration and Supervision*, 1921.
² BALLARD, P. B. : *The New Examiner*, 1925, Chapter VII.
³ SPEARMAN, C. E. : "Correlations of Sums and Differences."—*British Journal of Psychology*, 1913, 5.

RÉSUMÉ.

UN ARGUMENT FALLACIEUX DANS LA PSYCHOLOGIE PÉDAGOGIQUE.

Il est quelquefois suggéré que la validité d'un test est prouvée par le fait qu'il donne une corrélation plus élevée avec le moyen de deux autres tests, mesurant la même aptitude, qu'avec chacun d'eux séparément, puisque ceci démontre qu'il s'accorde mieux avec une mesure plus exacte de l'aptitude. Cet argument est inadmissible. La formule de Spearman pour la corrélation des sommes prouve que ce rapport existe de nécessité pour tout test, qu'il soit une bonne mesure, ou une mauvaise, de l'aptitude mesurée par les deux tests de comparaison.

ÜBERSICHT.

EIN TRÜGERISCHER BEWEISGRUND IN DER PSYCHOLOGIE DES ERZIEHUNGSWESENS.

Es wird zweilen gesagt, dass der Wert eines Tests durch die Tatsache gezeigt wird, dass er mit dem Mittel zwischen zwei zu dem gleichen Zweck gegebenen Tests in höherem Grade übereinstimmt als mit dem Ergebnis des einen oder anderen allein, da dies ja zeige, dass er mit einem verbesserten Massstab der Tätigkeit besser übereinstimmt. Dieses Argument ist nicht zulässig. Spearmans Formel für die Korrelation von Ganzen zeigt, dass diese Beziehung notwendigerweise für irgendeinen Test gilt, sei er nun ein guter oder schlechter Massstab der durch zwei Vergleichstests gemessenen Tätigkeit.

DIFFERENCES IN PERSEVERATION AMONG JEWISH AND ENGLISH BOYS.

(From the Department of Education, University of Leeds.)

By C. RANGACHAR.

- I.—*The measurement of perseveration in the individual and in racial groups.*
- II.—*Description of the tests.*
- III.—*Comparison of two racial groups.*
- IV.—*Possible explanations of the difference between the groups.*
 - (a) *Intelligence and perseveration.*
 - (b) *Speed in the first parts of the tests and perseveration.*
- V.—*Re-marking of the tests so that the measure of perseveration is independent of speed in the first parts of the tests.*
- VI.—*Summary of conclusions.*

I.—THE MEASUREMENT OF PERSEVERATION IN THE INDIVIDUAL AND IN RACIAL GROUPS.

In the study of perseverative differences, whether between individuals or racial groups, difficulties arise as to the relation of the proposed measure of perseveration to such variables as general ability or speed of writing. Also, if racial difficulties are studied, how is the term "race" to be defined?

"A distinct race," says Thorndike, "is a group of men who, to a considerable extent, have in common the same remote ancestry, its present descendants being to a considerable extent confined to that group."* But it is difficult to specify the use of the word "remote," as many anthropologists regard with extreme distrust any conclusions with regard to racial differences since a pure race does not exist. It is agreed that there are distinct and specific differences between certain "races" in physical characteristics, but even here there is no unanimity as to the nature and magnitude of the differences in intellectual and temperamental traits.

McDougall writes: "Just as there are undoubtedly wide innate differences between individuals of the same race in respect of such special mental capacities as musical and mathematical talent, power of visualisation and of concrete recollection, so also there are similar

* E. L. Thorndike: *Educational Psychology*, Vol. 3, p. 206.

differences between the races of man. The fact that we are quite unable to imagine or describe in what these innate capacities consist, as latent heredity disposition, is no ground for doubting their reality and importance."* McDougall has also given reasons for believing that various races differ in respect to relative strengths of several instinctive tendencies as well as temperamental qualities. Many capable investigators who employed tests of mental ability with specific racial groups have found significant differences between the performances of those groups, but it remains difficult to conclude how far those differences are due to inheritance. Can the samples tested be regarded as representative of the races considered? How far have environmental factors been eliminated?

It must further be admitted that tests as distinct from observation have for the most part yielded little except conjectures respecting emotional and temperamental traits. During the last thirty years, however, there has taken shape a concept, namely, that of perseveration which promises to throw considerable light on the study of temperament. Spearman's formulation of his law of inertia or perseveration may here be cited: "Cognitive events always both begin and cease more gradually than their (apparent) causes."† In so far as tests of perseveration prove to be reliable it becomes possible to trace what relations they bear to temperament, age, sex, social status, scholastic attainments, vocational fitness, race, etc. Before such investigations can be made, it is obvious that much preliminary work must be done in order to establish the validity of the tests and measurements to be used. The present paper is an attempt to further such aims. A number of tests will be described. When applied to two racial groups there appeared to be significant differences in performance. It is fully realized that these differences are not necessarily due to inheritance, that large samples should be taken, that more stringent control of environmental factors would be desirable. But it is nevertheless hoped that the results may be of use to other workers in this field. Two elementary schools in Leeds were selected, the pupils in one being Jews and in the other English, but both were of approximately the same social and economic status. The choice of schools was designed to rule out differences due to variations in school teaching. Differences in home training, including those due to racial customs and traditions, are difficult to control. It is not likely that they would materially affect the results of the tests employed.

* W. McDougall: *Report of the British Association*, 1924, page 440.

† C. Spearman: *The Nature of Intelligence and Principles of Cognition*, page 133.

Standard 5 pupils were employed. Originally there were forty-two Jewish and forty English boys, but two boys were absent from some of the tests, and some failed to follow the instructions in certain tests. There remained for statistical consideration thirty-eight Jewish and thirty-five English boys. The average age of the Jewish group was 11 years 15 days, and of the English 11 years 5½ months.

II.—DESCRIPTION OF THE TESTS.

The tests of perseveration selected were: Inverted S, Alphabets, Reverse Stroke, Mirror Image, Signatures, Triangles, Capitals. The subjects were instructed to do the tasks as quickly as possible.

(1) *The Inverted S Test*.*—The subjects wrote the ordinary S (thus SSSS . . .) and the inverted S (thus 2222 . . .) alternately for six periods of fifteen seconds each. Then followed a period of ninety seconds when they wrote the S and the 2 alternately (thus S2S2S2 . . .).

The degree of perseveration was measured by the hindrance effect H from the formula,

$$H = n_1 - n_2$$

where n_1 and n_2 are the numbers of letters (both S and 2) written in the first and second part of the test respectively.

(2) *The Alphabets Test*.—This was devised for the present work. It is quite similar in principle to the former test, but here the boys are familiar with the letters they have to write, while in the former test the inverted S is newly introduced. The subjects wrote for ninety seconds, abcdabcd . . . and ABCDABCD . . . alternately, each for fifteen seconds. Then followed another period of ninety seconds when they wrote aAbBcCdDaAbBcCdD . . . The measure of the hindrance was similar to that in the former test.

(3) *The Reverse Stroke Test*.†—The first part consists of writing the figures 234567 repeatedly for thirty seconds. In the second part, which lasts two minutes, each figure is produced by reversing the direction of the strokes. In this test

$$H = 4n_1 - n_2$$

(4) *The Mirror Image Test*.—This form of the test is due to Bernstein.‡ The subjects were instructed to write the printed capitals BCDEFG repeatedly for one minute, then to write the mirror image form of these letters for two minutes. Here,

$$H = 2n_1 - n_2.$$

* LL. Wynn Jones: *Perseveration—Report of the British Association*, 1915, page 698.

† LL. Wynn Jones: *loc. cit.*

‡ E. Bernstein: *Quickness and Intelligence—British Journal of Psychology, Monograph Supplement*, Vol. 3, No. 7.

(5) *The Signatures Test*.—Here the writer has modified the form of a test which had been employed by Wynn Jones at the suggestion of Professor Spearman. Twelve signatures were chosen so that (a) as far as possible all the letters of the alphabet (except j, p, q, and z) were contained in them; (b) the different letters are written in various styles. An analysis of the signatures will reveal:

Five different types of the letters r and t;

Four " " " a, e, o, and k;

Three " " " c, d, g, h, i, n, and s;

Two " " " b, l, m, and y;

the remaining letters, f, u, v, w, and x are rather uncommon and difficult to copy, and they appear only once in the selected signatures. Each subject was given a hectographed copy of the signatures and instructed to copy them for one minute in his usual handwriting and as quickly as he could. Afterwards he was asked to copy the same signatures and try to reproduce an exact likeness of them as far as possible, the time allowed being four minutes. In scoring the test the following points were considered: (a) the formation of loops; (b) the connecting links between the letters; (c) the lengths of the crossings of the t's and the proper placings of the dots of the i's. In addition to the above, as far as possible, individual letters where the subjects showed a tendency to go back to their own handwriting were considered as mistakes. The degree of perseveration was given by:

$$H = 4n_1 - (n_2 - m)$$

where n_1 is the number of letters written in the first part of the test, n_2 the number written in the second, and m the number of mistakes.

(6) *The Triangles Test*.—This test was taken from Bernstein's work.* The procedure is similar to that of the Inverted S Test, with "triangles with apex upwards" substituted for S and "triangles with apex downwards" for 8. The time for the first part was two minutes, the signal "change" being given every twenty seconds. The time for the second part was also two minutes.

(7) *The Capitals Test*.—This test was also used by Bernstein, and consists in copying a given passage firstly in the usual way for two minutes, then, secondly, copying the same passage for four minutes but this time changing all the capitals into small letters and *vice versa*. In marking the test the following procedure was adopted: (a) when a word is all in capitals and the subject begins it with a capital letter and writes the other letters as small letters, this is considered as one mistake; (b) when a word begins with a capital and the subject writes it entirely

* E. Bernstein: *loc. cit.*

in small letters, this is also considered as one mistake ; (c) when the subject copies the words exactly as given in the passage, this was regarded as one mistake or two according as the given word is all in the same type of letter or begins with a capital. The measure of perseveration was obtained from the formula :

$$H = 2n_1 - (n_2 - m)$$

where n_1 is the number of words written in the first part, n_2 the number in the second, and m the number of mistakes in the second.

Characteristics of the tests.

Each is divided into two parts and in the second there is a hindrance, as compared with the first part, due to the introduction of a type of movement which is different in character from the original. In the Inverted S, Alphabets, and Triangles Tests, a strong "set" is formed in the first parts of the tests, while in the second parts the subjects suffer to a greater or less extent from the hindrance effect due to the initial "set." In the Reverse Stroke Test all the movements of the first part are entirely reversed in the second. In the Mirror Image Test the direction of writing is not reversed but there is nevertheless a strong tendency to write the letters in the normal way and not as they appear in the mirror. In the Signatures and Capitals Tests a long-standing habit is being obstructed.

Reliability of the tests.

The tests were given five times on five different days, and the first day's results were not used. From each of the remaining four performances the measures H_2 , H_3 , H_4 , and H_5 were calculated for each test and the reliability of each test was obtained by correlating the sum of the second and fifth day's results (i.e., $H_2 + H_5$) with that of the third and fourth (i.e., $H_3 + H_4$). The reliability coefficients which resulted are given in Table I. They were calculated by the full product moment formula.

TABLE I.
THE RELIABILITY COEFFICIENTS OF THE TESTS.

| <i>Tests.</i> | <i>Jewish Boys</i> (38 cases) | | <i>English Boys</i> (35 cases) | |
|----------------------------|----------------------------------|-------------|-----------------------------------|-------------|
| | <i>r</i> | <i>p.e.</i> | <i>r</i> | <i>p.e.</i> |
| (1) Inverted S | .917 | .020 | .864 | .029 |
| (2) Alphabets | .765 | .045 | .759 | .048 |
| (3) Reverse Stroke | .868 | .028 | .843 | .034 |
| (4) Mirror Image | .927 | .015 | .894 | .023 |
| (5) Signatures | .935 | .014 | .889 | .026 |
| (6) Triangles | .892 | .021 | .883 | .027 |
| (7) Capitals | .838 | .032 | .799 | .041 |

III.—COMPARISON OF THE TWO GROUPS.

Attention must next be drawn to the average mark for each test in each group. If σ_1 and σ_2 are the standard deviations of the two groups and D the observed difference between corresponding averages, then an inspection of the ratio $\frac{D}{\sigma \text{ diff}}$ for each test will show if there are significant differences between the two groups. Table II shows the Jewish boys to exhibit greater perseveration for every test. Especially marked is the difference for the Signatures, Capitals, and Reverse Stroke Tests, and to a smaller degree in the case of the Alphabets, Inverted S and Mirror Image Tests.

TABLE II.

| <i>Jews.</i> | | | <i>English.</i> | | | |
|-----------------------|-----------------|------------|-----------------|------------|------------------------|----------------------------------|
| <i>Tests.</i> | <i>Average.</i> | σ_1 | <i>Average.</i> | σ_2 | $\sigma \text{ diff.}$ | $\frac{D}{\sigma \text{ diff.}}$ |
| (1) Inverted S .. | 15.50 | 9.32 | 12.64 | 8.12 | 1.90 | 1.51 |
| (2) Alphabets .. | 24.26 | 7.23 | 20.07 | 6.39 | 1.57 | 2.80 |
| (3) Reverse Stroke .. | 105.63 | 24.68 | 86.29 | 23.44 | 5.63 | 3.43 |
| (4) Mirror Image .. | 36.00 | 15.25 | 32.22 | 13.65 | 3.38 | 1.12 |
| (5) Signatures .. | 230.89 | 48.49 | 173.37 | 36.77 | 10.52 | 5.47 |
| (6) Triangles .. | 15.26 | 12.33 | 13.36 | 8.95 | 2.51 | 0.76 |
| (7) Capitals .. | 16.00 | 7.40 | 10.70 | 4.55 | 1.43 | 3.72 |

The intercorrelations were obtained by considering the average of the last four days' results. Tables III (a) and (b) give the results for each group, and Table III(c) the average intercorrelations. In view of the small number of cases the results can only be regarded as tentative. The Inverted S Test has not proved to be of service, but the results obtained with the others agree with those obtained by previous investigators as regards the size of the correlations.

TABLE III.

(a) INTERCORRELATIONS FOR JEWISH GROUP, THIRTY-EIGHT BOYS.

| <i>Tests.</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------|-------|------|-------|-------|------|------|------|
| (1) Inverted S .. | — | .244 | -.063 | -.130 | .018 | .046 | .029 |
| (2) Alphabets .. | .244 | — | .292 | .248 | .384 | .070 | .343 |
| (3) Reverse Stroke .. | -.063 | .292 | — | .381 | .444 | .224 | .324 |
| (4) Mirror Image .. | -.130 | .248 | .381 | — | .443 | .312 | .100 |
| (5) Signatures .. | .018 | .384 | .444 | .443 | — | .144 | .286 |
| (6) Triangles .. | .046 | .070 | .224 | .312 | .144 | — | .220 |
| (7) Capitals .. | .029 | .343 | .324 | .100 | .286 | .220 | — |

(h) INTERCORRELATIONS FOR ENGLISH GROUP, THIRTY-FIVE BOYS.

| Tests. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------|------------------|-------|------|-------|-------|-------|------|------|
| (1) | Inverted S .. | — | .181 | -.264 | -.290 | -.290 | .177 | .061 |
| (2) | Alphabets .. | .181 | — | .232 | .323 | .213 | .196 | .148 |
| (3) | Reverse Stroke.. | -.264 | .232 | — | .561 | .508 | .077 | .354 |
| (4) | Mirror Image .. | -.290 | .323 | .561 | — | .499 | .272 | .182 |
| (5) | Signatures .. | -.290 | .213 | .508 | .499 | — | .052 | .397 |
| (6) | Triangles .. | .177 | .196 | .077 | .272 | .052 | — | .349 |
| (7) | Capitals.. .. | .061 | .148 | .354 | .182 | .397 | .349 | — |

(c) AVERAGE INTERCORRELATIONS.

| Group | Inverted S | Alphabets | Reverse Stroke | Mirror Image | Signa- tures | Triangles | Capitals |
|------------|---------------|-----------|-------------------|-----------------|-----------------|-----------|----------|
| Jews .. | .024 | .264 | .267 | .226 | .287 | .169 | .217 |
| English .. | -.071 | .216 | .245 | .258 | .227 | .187 | .249 |

IV.—POSSIBLE EXPLANATIONS OF THE DIFFERENCE BETWEEN THE GROUPS.

(a) *Intelligence and Perseveration*.—Is the difference noted above due to a difference in intelligence between the two groups? Although evidence has already been obtained by other investigators that tests such as the above do not seem to depend on intelligence, it was nevertheless decided to apply Spearman's *Measure of Intelligence* (Group Oral Tests) to both groups. The resulting scores were correlated with the teachers' estimates of intelligence and the resulting coefficients were .67 for the Jewish Group and .70 for the English Group.

TABLE IV.

COMPARISON OF THE TWO GROUPS IN "INTELLIGENCE."

| Group. | Average. | σ dis. | σ diff. | D | $\frac{D}{\sigma \text{ diff.}}$ |
|---------------|----------|---------------|----------------|------|----------------------------------|
| Jews | 114.42 | 16.22 | 3.54 | 5.06 | 1.43 |
| English | 109.36 | 14.06 | | | |

In this case the ratio $\frac{D}{\sigma \text{ diff}}$ is 1.43, which, taken at its face value,

means that there are ninety-two chances out of a hundred that the Jewish boys are the more intelligent. But does this prove that the difference we have found in the perseveration tests is entirely or partly due to this superiority in intelligence? Before attempting to answer the question it is necessary to find the correlations between the tests of perseveration and the test of intelligence. These are shown in Table V. It would appear that whatever intercorrelations exist between the different tests of perseveration are not produced by the common factor of intelligence, and that the slight superiority of the Jewish Group in intelligence cannot explain the difference observed between the two groups in the perseveration tests.

TABLE V.
CORRELATION BETWEEN "INTELLIGENCE" AND "PERSEVERATION."

| Tests. | Jews (38 cases) | English (35 cases) |
|-------------------|--------------------|-----------------------|
| | <i>r</i> | <i>r</i> |
| Inverted S | -.07 | .13 |
| Alphabets | -.16 | .12 |
| Reverse Stroke .. | -.08 | -.09 |
| Mirror Image .. | -.00 | .12 |
| Signatures | -.03 | .01 |
| Triangles | .13 | .06 |
| Capitals | -.17 | -.09 |
| | (p.e. about 0.11) | |

(b) *Speed in the first part of the tests and "perseveration."*—In scoring some of the the tests it was noted that the measure of perseveration taken might tend to bring out the quick writer as a perseverator. As the Jewish boys appeared to be quick writers it was suggested that this might explain, to a certain extent, the difference in perseveration between the two groups. Table VI shows the correlation between speed in the first part of the tests and "perseveration" as measured by the corresponding test. It will be seen that these correlations are very significant if the Inverted S and Triangles Tests are excepted. Further, Table VII, which compares the two groups in speed of writing the first parts of the tests, shows that the Jewish boys are quicker then the English in every one of the tests except the Triangles Test, in which the ratio is only .47. From these data it is difficult to resist the conclusion that the difference in speed of writing the first parts of the tests is the main cause of the observed difference in "perseveration" between the two groups.

TABLE VI.

CORRELATIONS BETWEEN SPEED IN THE FIRST PART OF THE TESTS AND
" PERSEVERATION " AS MEASURED BY THE CORRESPONDING TESTS.

| <i>Tests.</i> | <i>Jews.</i> | | <i>English.</i> | |
|------------------------|--------------|-------------|-----------------|-------------|
| | <i>r</i> | <i>p.e.</i> | <i>r</i> | <i>p.e.</i> |
| Inverted S | ·06 | ·11 | —·32 | ·10 |
| Alphabets | ·53 | ·08 | ·41 | ·09 |
| Reverse Stroke | ·88 | ·02 | ·80 | ·04 |
| Mirror Image | ·81 | ·04 | ·76 | ·05 |
| Signatures | ·87 | ·02 | ·86 | ·03 |
| Triangles | ·32 | ·10 | ·13 | ·11 |
| Capitals | ·46 | ·09 | ·54 | ·08 |

TABLE VII.

COMPARISON OF THE TWO GROUPS IN THE FIRST PARTS OF THE TESTS.

| <i>Tests.</i> | <i>Jews.</i> | | <i>English.</i> | | <i>σ diff.</i> | $\frac{D}{\sigma \text{ diff.}}$ |
|------------------------|----------------|------------|-----------------|------------|----------------|----------------------------------|
| | <i>Average</i> | σ_1 | <i>Average</i> | σ_2 | | |
| Inverted S | 108·92 | 13·20 | 100·50 | 14·94 | 3·31 | 2·54 |
| Alphabets | 94·07 | 13·81 | 86·07 | 13·81 | 3·24 | 2·47 |
| Reverse Stroke | 87·08 | 14·41 | 74·50 | 14·58 | 3·40 | 3·70 |
| Mirror Image | 55·11 | 12·22 | 47·93 | 11·42 | 2·77 | 2·59 |
| Signatures | 67·55 | 13·14 | 53·93 | 11·24 | 2·87 | 4·77 |
| Triangles | 97·76 | 16·39 | 95·93 | 16·85 | 3·90 | 0·47 |
| Capitals... .. . | 27·95 | 5·08 | 23·20 | 4·97 | 1·18 | 4·03 |

V.—RE-MARKING OF THE TESTS TO OBTAIN A MEASURE OF PERSEVERATION WHICH IS INDEPENDENT OF SPEED IN THE FIRST PARTS OF THE TESTS.

In view of the correlations between the first parts of the tests and perseverance as measured by them, and as there is no a priori reason why speed of writing should correlate so highly with perseverance, it would be desirable to get an independent measure of perseverance from a sufficiently diagnostic test or from a questionnaire, and then treat the data of our tests as follows: consider the Reverse Stroke Test as an example. Let a_1 be the ability to write figures in the usual way (first part of test) and a_2 be the ability to write figures in the reverse way (second part of the test), and b the independent measure of

perseveration. Then $(na_1 - a_2)$ will be the best possible measure of perseveration from this test, if n is chosen such that $r(na_1 - a_2)b$ is a maximum. This value of n which makes it a maximum can be found by using Spearman's formula for correlations of sums and differences.* But, in the absence of an external criterion, an empirical method has here been adopted which tacitly assumes the independence of speed of writing in the first part of the tests and perseveration. It is a problem for investigation to ascertain if the assumption is correct. With this assumption, then, $r(na_1 - a_2)a_1 = 0$. But, according to Spearman's formula

$$r(na_1 - a_2)a_1 = \frac{n\sigma_{a_1} - \sigma_{a_2} r_{a_1a_2}}{\sqrt{n\sigma_{a_1}^2 + \sigma_{a_2}^2 - 2n\sigma_{a_1}\sigma_{a_2} r_{a_1a_2}}}$$

This will be zero when $n = \frac{\sigma_{a_2}}{\sigma_{a_1}} r_{a_1a_2}$. Substituting the numerical values

of σ_{a_1} , σ_{a_2} , and $r_{a_1a_2}$, we find in the case of the Reverse Stroke Test $n = .28$ for the Jewish Group and $n = .23$ for the English Group. Thus an approximate measure of perseveration for both groups of $(.25 a_1 - a_2)$ was taken. The other tests were treated in a similar manner and the approximate values of n adopted were: Alphabets, .75; Reverse Stroke, .25; Mirror Image, .75; Signatures, .50; Capitals, .75.

The effect of this procedure was to decrease the intercorrelations. But although reduced they are still positive on the average as shown in Table VIII.

TABLE VIII.

AVERAGE INTERCORRELATIONS AFTER RE-MARKING.

| | | <i>Alphabets.</i> | <i>Reverse Stroke.</i> | <i>Mirror Image.</i> | <i>Signatures.</i> | <i>Capitals.</i> |
|---------|-------|-------------------|----------------------------|--------------------------|--------------------|------------------|
| Jews | | .19 | .13 | .11 | .13 | .11 |
| English | | .16 | .07 | .11 | .15 | .08 |

Table IX gives the ensuing partial coefficients of correlation after re-marking and then eliminating "g." The medians of the tetrad differences were -0.0124 for the Jewish and -0.0041 for the English Group, while the probable errors were 0.0362 and 0.0368 respectively.†

* C. Spearman: *Correlations of Sums and Differences*—*British Journal of Psychology*, Vol. 5, page 425.

† C. Spearman: *The Abilities of Man*, Appendix, page XI, formula 16a.

This is in agreement with the previous evidence for the existence of a common factor pervading the tests.

Table X may be compared with Table II. Each of the five tests, after re-marking, still exhibits the tendency of the Jewish boys to be more perseverative than the English boys. In three out of five the tendency is fairly significant.

TABLE IX.

PARTIAL CORRELATIONS (AFTER ELIMINATING "G").

| Tests. | <i>Jews.</i> | | | | |
|-----------------------|--------------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| (1) Alphabets .. | — | ·166 | ·177 | ·240 | ·106 |
| (2) Reverse Stroke .. | ·166 | — | ·058 | —·071 | ·280 |
| (3) Mirror Image .. | ·177 | ·058 | — | ·280 | —·064 |
| (4) Signatures .. | ·240 | —·071 | ·280 | — | ·001 |
| (5) Capitals .. | ·106 | ·326 | —·064 | ·001 | — |

| Tests. | <i>English.</i> | | | | |
|-----------------------|-----------------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| (1) Alphabets .. | — | ·106 | ·137 | ·339 | ·037 |
| (2) Reverse Stroke .. | ·106 | — | ·004 | —·095 | ·226 |
| (3) Mirror Image .. | ·137 | ·004 | — | ·316 | —·003 |
| (4) Signatures .. | ·339 | —·095 | ·316 | — | —·005 |
| (5) Capitals .. | ·037 | ·226 | —·003 | —·005 | — |

TABLE X.

| | <i>Jews.</i> | | <i>English.</i> | | σ diff. | $\frac{D}{\sigma \text{ diff.}}$ |
|-----------------------|----------------|------------|-----------------|------------|----------------|----------------------------------|
| | <i>Average</i> | σ_1 | <i>Average</i> | σ_1 | | |
| (1) Alphabets .. | 1·24 | 5·58 | —0·064 | 6·56 | 1·43 | 1·31 |
| (2) Reverse Stroke .. | —24·95 | 11·26 | —26·46 | 7·51 | 2·37 | 0·67 |
| (3) Mirror Image .. | 2·26 | 6·27 | —0·77 | 3·60 | 1·18 | 2·56 |
| (4) Signatures .. | 95·53 | 23·95 | 65·37 | 15·86 | 4·73 | 6·38 |
| (5) Capitals .. | 8·50 | 11·30 | 8·22 | 10·49 | 2·55 | 0·11 |

VI.—SUMMARY OF CONCLUSIONS.

(1) The reliability coefficients of all the perseveration tests employed were high.

(2) Their intercorrelations were positive (if the Inverted S Test be excepted), and the degree of their significance agrees with that obtained by previous investigators.

(3) The Jewish Group exhibits greater perseveration in each test when the measure of perseveration is the difference between the efficiency in the first and second part of the test.

(4) This difference does not appear to be due to the slight superiority of the Jewish Group in "intelligence."

(5) The Jewish Group exhibited greater speed in the first part of each test of perseveration, and it seems probable that this is the main cause of the observed difference in perseveration between the two groups.

(6) On re-marking each test so that the measure of perseveration is independent of speed in the first part of each test, the intercorrelations are reduced but still tend to be positive.

RÉSUMÉ.

DES VARIATIONS DE PERSÉVÉRANCE CHEZ DES GARÇONS JUIFS ET DES GARÇONS ANGLAIS.

On démontre la nécessité d'examiner le rapport entre toute mesure proposée de la persévérance et d'autres variables, telles l'intelligence générale et la rapidité de l'écriture. Pour cette raison l'étude des différences de race, qui se révèlent dans la persévérance, est une tâche compliquée, même s'il ne se présentait point la difficulté additionnelle de définir exactement le terme "race."

On entreprit un examen préliminaire avec un petit groupe échantillon de garçons juifs et un autre de garçons anglais. On employa sept tests de persévérance, chacun ayant une validité élevée. Les garçons juifs montrèrent une persévérance plus soutenue que les garçons anglais dans chacun des tests où la mesure de la persévérance consistait dans la différence entre l'efficiencé dans la première et la seconde partie de chaque test.

La légère supériorité des Juifs, en ce qui concerne l'intelligence, ne semble pas expliquer cette différence, car la mesure déjà citée de la persévérance était indépendante de l'intelligence. Il paraît que la cause principale de la différence soit la rapidité plus grande du groupe juif dans la première partie de chaque test. Au moyen de la formule de Spearman pour la corrélation des sommes et des variations on obtint une mesure de la persévérance indépendante de la rapidité dans la première partie de chaque test. Par conséquent les corrélations entre les tests se trouvent réduites, mais tendent encore à être positives.

ÜBERSICHT.

PERSEVERATIONSUNTERSCHIEDE BEI JÜDISCHEN UND ENGLISCHEN KNABEN.

Auf die Notwendigkeit wird hingewiesen, das Verhältnis zwischen irgend einer vorgeschlagenen Perseverationsprobe und anderen Variablen wie z. B. allgemeiner Intelligenz und Schnelligkeit im Schreiben zu untersuchen. Deswegen ist die Untersuchung von Perseverationsunterschieden bei den verschiedenen Volksstämmen eine komplizierte Aufgabe, auch wenn die weitere Schwierigkeit, den Ausdruck „Volksstamm“ zu bestimmen, nicht entstände.

Eine vorhergehende Untersuchung bei kleinen „samples“ (Teilmengen) wurde gemacht. Sieben Perseverationstests wurden benutzt; jeder besass einen hohen Grad der Zuverlässigkeit. Die jüdischen Knaben zeigten mehr Perseveration als die englischen Knaben bei jedem Test, wo der Perseverationsmassstab die Differenz zwischen der Zeistungsfähigkeit im ersten und im zweiten Teil jedes Tests war.

Die unbedeutende Überlegenheit der jüdischen Gruppe in der Intelligenz scheint diesen Unterschied nicht zu erklären, da obige Perseverationsprobe von der Intelligenz unabhängig war. Es stellte sich heraus, dass der Hauptgrund für den Unterschied der grösseren Schnelligkeit der jüdischen Gruppe im ersten Teil jedes Tests zuzuschreiben war. Mittels der Formeln Spearmans für die Korrelation von Ganzen und Differenzen bekam man einen von Schnelligkeit im ersten Teil jedes Tests unabhängigen Perseverationsmassstab. Infolgedessen werden die Interkorrelationen zwischen den Tests vermindert aber sie haben noch eine Neigung positiv zu sein.

A STUDY OF THE EFFICIENCY OF "INDIVIDUAL WORK."

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PART I.

- I.—*Introduction. The need for experimental studies of classes where new methods are used.*
- II.—*An Edinburgh experiment with Individual Work.*
- III.—*The testing of the classes.*
- IV.—*The testing of Experimental Class A and Control Class X.*
- IVA.—*Results of tests during 1927-1929.*

I.—INTRODUCTION.

THE growing number of teachers who use "Individual Methods" of various types are agreed (and rightly) that the justification of such methods is to be sought in the attitudes induced in the children rather than in superior "efficiency" shown by examination results. Hence advocates of the Dalton Plan, the Project Method, and the many variants of these tend to lay stress on the interest and enthusiasm of the children, the development of initiative, the training for social life, the growth in the capacity for appreciation as distinct from the acquisition of knowledge. The realist, taking the form of the man in the street, the member of an Education Committee, the unsympathetic headmaster, or the conscientious and efficient teacher who largely identifies education with instruction, then enquires "How do your pupils compare with others in the more measurable results of schooling?" To satisfy the realist we must be prepared to subject our free-study classes to tests in the more mechanical aspects of school work, and to compare those results with the work obtained from parallel classes using the orthodox methods of class teaching. Examples of such comparisons on a large scale are to be found in "A Survey of the Winnetka Schools,"² and in "An Experiment with a Project Curriculum."³

II.—AN EDINBURGH EXPERIMENT WITH INDIVIDUAL WORK.

Some years ago an Edinburgh school reorganized its Infant Department and adopted Montessori methods. The teachers were satisfied that these resulted in very happy classes, excellent relations between

pupil and teacher, and sound foundations for future school work. They did not aim at immediate "results" in the form of examination marks, believing that, especially at the early stages of school life, methods which produce apparent efficiency in the school subjects may lead to verbal rather than to real knowledge. Nevertheless the "results" in terms of scholastic efficiency were good. They were measured by means of standardized tests by a teacher with psychological training, and the children leaving the infant room proved more than equal to others in a school of the same type using traditional methods.

The school, which we shall call the Experimental School, then decided, with the sanction of the Edinburgh Education Authority, to have individual methods of learning and teaching carried up into the junior and senior classes. Hence the two classes in this school which I shall call Experimental Classes *A* and *B*, have never experienced orthodox "class" methods. In the junior classes, at the age of seven and eight they used not the Montessori Method, but a less well-defined set of activities, sometimes approximating to the Project Method (especially in the case of Class *B*), at other times approaching what is called in England the "Sub-Dalton Plan." The new material now provided by many publishers in the form of "job-cards" of various kinds was freely used. Books for "Silent Reading" with exercises to test comprehension proved valuable. Class lessons did not disappear altogether, but they diminished greatly in number. The children worked through the different exercises at their own rate, usually keeping records of their progress, and having their work checked before proceeding to the next stage. Assignments for the day were in the early stages written on a black-board, but as the children were all at different stages the work could not be exactly prescribed. Thus the black-board of a junior class might read as follows :

"Primary Silent Reading."—Book II.—Next lesson.

Arithmetic Practice Cards.

Spelling Practice.

History *or* Geography job card.

Copy a verse of a poem and learn it.

Practise six times table.

The first written assignments prescribed a week's work, and as the children grow older these were replaced by assignments for a fortnight and a month.* Both classes used assignments, but apart from that similarity the practice differed considerably. The teacher of Experimental

*It should be noted that *A* and *B* are not parallel to each other. They are simply the classes which left the infant room in September, 1927, and May, 1928, respectively.

Class *A* set herself to cover the Edinburgh Education Authority's regular syllabus, and aimed frankly at efficiency. The children have worked at varying rates according to their differing capacity, they have worked independently and one is impressed by their thoroughness and their diligence. It is obvious too that they are happy and interested. The duller children work on a "minimum essentials" basis, while the brighter pupils do what are sometimes termed "plus" assignments. On the analogy of Dr. Rugg's terminology we might call the class "curriculum centred."

Experimental Class *B*, on the other hand, is distinctly "child-centred." True there have been assignments all along, but the many projects, both individual and group projects, which are carried out during school hours mark the class as belonging to the van of the new movement. The classroom is particularly well adapted for varied activities, being large with many cupboards and some large flat tables in addition to individual desks. The children move freely about in pursuance of their various jobs. Robert and David are collaborating to produce a "book" on Africa; John has a passion for history and neglects other work to make drawings of the armour and weapons of a Crusader; Richard is making models of the tools of the Stone Age; Moira is writing jokes for the magazine; Mary and Hetty are arranging and cataloguing the library, while others are doing spelling practice or finishing assignments. There are many Group Projects. The children (aged ten) have produced two numbers of a magazine during the last year, doing all the editing, writing, drawing, etc., themselves. The editors sent back misspelled MSS. to be corrected by the authors. The business editors induced the neighbouring shopkeepers to insert advertisements, paying 2s. per page, and when the magazine had been cyclostyled and sold in large numbers the headmaster was presented with a handsome contribution for the funds of the Royal Infirmary, and a balance sheet which showed accurately how the profits were made. Other projects have been the organizing and carrying through of a class party, and a study of Leith Docks lasting over a considerable period.

There has been no pressure. Team competition was used as an incentive when the children were younger but the need for it disappeared as the projects multiplied in number and complexity. The children work at their own rate, the teachers' aim being that each should achieve self-respect, self-expression, and joy in work. In spelling and arithmetic there has been some systematic practice, an adaptation of the Winnetka scheme being used in spelling and the Courtis Practice Tests in arithmetic.⁴ The children have done a great deal of reading, and have collected and

catalogued a library which is used in the doing of assignments. In most classes at this stage each child has a reading book, a poetry book, a history, a geography, and arithmetic book, and the class has one or two sets of books which may be used for various purposes, each child having the same book. Here the class allowance was spent mainly on the library; it was not considered essential or desirable that every child should have the same text books; indeed most of the books bought were not text books in the ordinary sense, but children's books on literature, natural history, and such subjects. The janitor, an "educationist" of the old school, looked at them in sorrow; "These are not school books," she exclaimed, "They are like Christmas presents."

III.—THE TESTING OF THE CLASSES.

Experimental Class *A* left the Infant Room in 1927, and Experimental Class *B* in 1928. Beginning at that stage the tests described below were done with each class during the years 1927-1931 and 1928-1931 to determine how far the individual methods enabled the pupils to keep up with pupils taught in the usual way.

It was decided that during the period of the experiment the experimenter should keep in touch with the Experimental Classes and with parallel classes in other schools. These classes must be comparable in age, social standing, and intelligence. The teachers must be comparable in efficiency to the teachers of the Experimental Classes. Finally it would have been desirable to choose children from schools where the Montessori Method was used in the infant department and Class Method in the junior and senior divisions. This, however, was not possible. The control schools chosen had good infant departments making considerable use of modern methods, but on the whole the children had all along had class teaching, not individual work.

Naturally the necessity of having teachers of equal efficiency in all the classes, both experimental and control, was not lost sight of, and considerable thought was given to this point in selecting the classes to be used. All the teachers involved in this experiment were trained and experienced, and all were described by their head masters as extremely efficient. In all the classes one was aware of a quiet efficiency and of very happy relations between teacher and class. In the opinion of several experienced supervisors who were consulted, there were no differences of teaching power likely to make comparisons of method invalid.

Since the experimental classes themselves used different methods we shall treat the testing of these classes separately.

IV.—THE TESTING OF EXPERIMENTAL CLASS A AND CONTROL CLASS X.

Experimental Class A in October, 1927, had 40 pupils—23 girls and 17 boys. The average age was 7 years 6 months. Its Control Class in another school, which we shall call X, had 46 pupils—21 girls and 25 boys. The average age was 7 years 3 months. The schools were in the same neighbourhood, and both head masters agreed that the children were comparable in social class. A typical list of parental occupations runs as follows: Cooper, engine-driver, sailor, postman, fireman, joiner, stationer, baker, printer. Individual work with the children in Binet Testing, however, left the impression that the children of Experimental Class A had the advantage in social training, but whether this was due to the individual work already done in school or to the influence of the home it was hard to say. The Experimental Class proved to have on the average greater intelligence, but this discovery was only made after a considerable time as the Binet testing spread over a long period.

Group Tests were done in October, 1927, to discover the relative position of the classes at the beginning of the experiment. The following tests were used:—

- (1) Haggerty's Intelligence Test (Delta I).⁵
- (2) Haggerty's Reading Examination, Sigma I.⁶
- (3) Burt's Spelling Tests (ages 6-9 inclusive).⁷
- (4) Burt's Arithmetic Fundamentals Tests. Addition and Subtraction.⁸

While the Haggerty mental ages had no significance, being far too low in the light of all other tests, the difference between the average scores indicated what proved to be a real difference between the classes.

The averages were:

Experimental A 39·8 (14·75 st. dev.)

Control X, 34·7 (11·7 st. dev.)

The Group Scholastic Tests proved suitable enough, and the children enjoyed them. The same tests were repeated in July, 1928, and again in July, 1929, Burt's Multiplication and Division Tests being added as the children grew older. As a few of the better children had almost perfect scores in the reading test in July, 1928, Gate's Silent Reading Test, Type C,⁹ was given in July, 1929. This gives two scores: (a) number correct; (b) percentage accuracy. These scores may be combined in finding a reading age. It was intended that all children should have a Binet Intelligence Test, but this occupied so much time that it did not

TABLE I.

EXPERIMENTAL CLASS A AND CONTROL CLASS X, OCTOBER, 1927—JULY, 1929.

| | October, 1927. | | July, 1928. | | July, 1929. | |
|---|-------------------------|------------------------|-------------------------|-------------------------|---|---|
| | Experimental Class A. | Control Class X. | Experimental Class A. | Control Class X. | Experimental Class A. | Control Class X. |
| Average { Chronological Age .. Binet I.Q. Haggerty Sigma I. | 7y. 6m. 39-8 (14-75) | 7y. 3m. 34-7 (11-7) | 8y. 4m. 106-2 (14-3) | 8y. 1m. 100-2 (9-75) | 9y. 4m. — | 9y. 1m. — |
| Reading—Haggerty Delta I .. | 20-25 (11-4) | 15-38 (6-70) | 27-6 (6-2) | 23-25 (7-55) | Gates C. No. Correct : 10 (4-6) % Accuracy: 65-6 (20) 11y. 1m. | No. Correct : 6-7 (3-8) % Accuracy: 46-7 (19-8) 9y. 8m. |
| Reading—Age | 8y. 4m. | 7y. 6m. | 9y. 2m. | 8y. 8m. | 10y. 10m. (11-2m.) | 10y. 1m. (9m.) |
| Burt's { Spelling Test | 8y. 5m. (8-5m.) | 8y. 0m. (10m.) | 9y. 7m. (8-7m.) | 8y. 1m. (9-8m.) | 31-5 (11-7) 12y. 8m. | 23-1 (7-4) 10y. 8m. |
| Burt's { Addition Test | 13-78 (7-19) 8y. 0m. | 7-2 (5-9) 6y. 4m. | 19-5 (7-5) 9y. 6m. | 14-68 (5-6) 8y. 3m. | 55-8 (21-6) 11y. 10m. | 38-4 (14-8) 9y. 5m. |
| Burt's { Subtraction Test | 30-42 (8-64) 8y. 4m. | 24-1 (10-4) 7y. 7m. | 36-2 (13-6) 9y. 3m. | 31-83 (10-4) 8y. 6m. | 51-8 (21-3) 11y. 2m. | 25-7 (9-9) 8y. 0m. |
| Burt's { Multiplication Test .. | — | — | 33-5 (8-9) 9y. 1m. | 15-7 (4-8) 7y. 2m. | 33-3 (13-9) 10y. 10m. | 15-9 (9-2) 8y. 0m. |
| Burt's { Division Test | — | — | — | — | — | — |
| Arithmetic Age. (All Arithmetic Tests combined.) | 8y. 2m. | 7y. 0m. | 9y. 3m. | 8y. 0m. | 11y. 8m. | 9y. 0m. |
| Educational Age | 8y. 4m. | 7y. 6m. | 9y. 4m. | 8y. 6m. | 11y. 2m. | 9y. 7m. |
| (All Subjects.) | | | | | | |

The numbers in parenthesis are the standard deviations of the distributions.

prove possible to complete the testing of the classes. At the time of writing 72 of the children in these two classes have had a Binet Test. These include all children in Experimental Class *A* and the greater number of Control Class *X*. Control Class *X* has changed its composition a good deal, and although at one time the whole class had been tested, there have been a number of newcomers since that date, while others have left. The National Intelligence Test (Scale A) was done in both classes in February, 1931, so that there might be some means of estimating the intelligence of all children.

IVA.—RESULTS OF 1927-29 TESTS.

As the tests done in 1930 and 1931 differed from those done earlier, the results of the earlier ones will first be summarized.

The first thing one observes from such a table is that Experimental Class *A* leads all through. It had an initial advantage in 1927, and this advantage it has retained. But we must not forget that :

- (1) The average chronological age is three months higher in the Experimental Class than in the Control Class,
- (2) The Experimental Class has on the average a higher I.Q.

In order to make allowance for the difference in age and intelligence we transformed the composite scores into Accomplishment Ratios.¹⁰ The Accomplishment Ratios below are approximate ; they were obtained not from the educational ages of individual children, but from class averages. The class average was in every case computed from individual scores. By reference to the norms these averages were transformed into educational ages (*see Table I*) and the educational ages were in turn used to obtain Educational Quotients $\frac{(E.A.)}{(C.A.)}$ and Accomplishment Ratios $\frac{(E.Q.)}{(I.Q.)}$.

In the more careful study of later tests Accomplishment Ratios were obtained by more exact methods.

Binet Tests done on both classes during 1927-28 and 1928-29 showed that the average I.Q.'s of the Experimental and Control Classes were 106 and 100 respectively, so these values have been used as a basis of calculation for each of the three groups of results. Table II shows what happens when the Experimental Class receives a handicap based on its greater age and intelligence.

TABLE II.

| | <i>October, 1927.</i> | <i>July, 1928.</i> | <i>July, 1929.</i> |
|-------------------------------|-----------------------|----------------------|----------------------|
| Experimental Class <i>A</i> { | E.Q. 111 A.R. 105 | E.Q. 112 A.R. 106 | E.Q. 120 A.R. 113 |
| Control Class <i>X</i> { | E.Q. 103 A.R. 103 | E.Q. 105 A.R. 105 | E.Q. 106 A.R. 106 |

The differences between class achievements largely disappear except in July, 1929. Here Experimental Class *A* makes very high scores, especially in arithmetic. The arithmetic in Class *X* appears poor partly because in multiplication and division this class was still at the stage when accuracy was more important than speed. Tests like Burt's show clearly the degree to which the number combination have been mechanized, but it would be unfair to condemn a young class for putting accuracy before speed. Dr. Courtis does not advocate the use of his Practice Tests until the Third Grade in American Schools. Now in 1929 Experimental Classes *A* and *B* were comparable in age to third grade classes. Another handicap from which the children in *X* undoubtedly suffered was that they were more easily upset by tests which took an unfamiliar form than those in *A*, who used various forms of individual practice material. The long lists of figures in Burt's tests alarmed them, used as they were to copying down half a dozen sums from the blackboard and working these on slates or notebooks. It was curious to note that children who were said to work quite long sums from the blackboard with very fair accuracy often made zero scores on Burt's computation sheets, although the sums were very much simpler than those being practised in the regular class lessons. This can only be attributed to flurry. The arithmetical age of eight years does not represent fairly the ability of Class *X* in Multiplication and Division in 1929. On the other hand an arithmetical age of 11 years eight months certainly over-estimates *A*'s achievements at that time, good as they were. Extended testing in Edinburgh has indicated that the norms for the tests in "Fundamentals" in Burt's "Mental and Scholastic Tests" are too low for Scottish children. It was also felt that tests involving various types of computation, and problems, would be required to make a satisfactory survey. The classes differ least in spelling, where again Burt's norms are on the whole too low for Scottish children. In Reading *A* has a particularly high accuracy score, which raises the average reading age. The highest class averages which Dr. Gates has got from a third grade class in New York, tested

at mid-year, are : number correct, 7 ; Percentage accuracy, 65 ; Experimental Class A scores 10 and 65.6 respectively. We may quote Professor Gates's comment on his table : " These figures are much higher than the averages of all classes upon which the norms are based. It seems reasonable to assume that any average class, with excellent teaching, might equal the actual achievement pictured in this table." ¹¹*

It should be noted that both the Experimental Class and the Control Class habitually exceed the norms, also that both are doing better work than need be expected of them when mental age is taken into consideration. In 1929 the average Educational Age assigned to Experimental Class A seemed too high. Excellence in mechanical computation gave this class an undue advantage. The more varied group of tests done in 1930 confirms this opinion.

(To be continued.)

(Résumés in French and German will be given at the end of Part II in the next number.)

RESEARCHES IN EDUCATION.

REPORT OF COMMITTEE FOR RESEARCH IN EDUCATION. (*British Psychological Society.*)

THE Committee for Research in Education, which is a Committee of the Council of the British Psychological Society, has collected data concerning psychological research in progress in educational institutions throughout the country. A summary of the topics of particular interest to educationists is printed below :

ADOLESCENCE.

Edinburgh, University of, George Combe Psychological Laboratory. Motivation and accessory concomitants of delinquency, with special regard to adolescents ; Psychological study of perception and memory of the relations and development of time concepts in high school pupils.

Leeds, University of. The conceptual development of adolescents.

London, University of, King's College. Friendship-love in adolescence.

London, University of, London Day Training College. Scientific interests of girls 12-13 years old.

South Wales, University College of, Training Department for Women, Cardiff. Adolescence.

BILINGUALISM.

Bangor, University College. Influence of bilingualism upon mental processes.

South Wales, University of, Training Department for Men, Cardiff. The Teaching of Welsh to English-speaking children.

Swansea, University College. An investigation of the relation between bilingualism and intelligence.

COLOUR VISION.

Edinburgh, University of, George Combe Psychological Laboratory. Group tests of colour vision for use in schools.

London, National Institute of Industrial Psychology. Colour discrimination.

Manchester, University of. Experimental tests of colour discrimination.

DELINQUENCY AND MALADJUSTMENT.

Edinburgh, University of, George Combe Psychological Laboratory. Motivation and accessory concomitants of delinquency, with special regard to adolescents.

London, Child Guidance Clinic, Jewish Health Organization. Relation of position in family to the manifestations of delinquency ; Nature of the difficult family ; Incidence of inherited mental disabilities in the neurotic and difficult child ; Relation of mental retardation to delinquency ; Relative importance of social and individual interpretations of behaviour disorders in children.

London, The London Child Guidance Clinic. The validity of the intelligence quotient in cases of emotional disturbance ; Perseveration as a method of diagnosis of personality types.

London, University of, King's College. The psychology of evidence. Comparison of testimony in normal and delinquent youths.

London, University of, University College. An experimental investigation, in terms of p -factor and w -factor, of difficult children.

EMOTION, TEMPERAMENT, AND PERSONALITY.

Birmingham, University of. The development of humour in children.

Cambridge, The Psychological Laboratory. Personality and temperament studies ; Interests, perseveration, and temperament.

Durham, University of, Armstrong College. An investigation into the variation of perseveration among school children and its effect upon school attainments.

Edinburgh, University of, George Combe Psychological Laboratory. Investigation of temperament tests ; Individual differences in suggestibility.

Hull, Municipal Training College. Leisure pursuits of Jewish and non-Jewish children of different ages.

London, Institute of Medical Psychology. Tests to demonstrate the real lines of interest of children ; Differentiation of specific types of mind.

London, University of, King's College. Perseverance and perseveration.

London, University of, University College. An experimental study of influences entering into certain character estimates ; The diagnostic value of p -factor amongst school children.

GENERAL INTELLIGENCE.

Birmingham, University of. An experimental enquiry into the suitability of the Otis group tests of intelligence for use with matriculated students ; Correlation between performance in English composition and intelligence tests.

Durham, University of, Armstrong College. The effect of subconscious association in intelligence testing.

Edinburgh, University of, Department of Education. Follow up enquiries of children of known intelligence ; Binet tests in two Indian languages.

Leeds, University of. The intelligence of school children of some of the castes of Travancore.

London, University of, London Day Training College. Group factor in reasoning.

London, University of, University College. The quality-quantity function of intelligence ; Individual differences in reproduction of completed and uncompleted test-items ; The g-variation for 400 girls, after an interval of two years, in terms of the tetrad criterion.

South Wales, University College of, Training Department for Men, Cardiff. An investigation into problems relating to admission to secondary schools by competitive examination, including use of intelligence tests.

South Wales, University College of, Training Department for Women, Cardiff. Critical consideration of performance tests.

IMAGERY.

Birmingham, University of. Sex differences in early childhood in spatial observation and visual imagery.

Leeds, University of. The prevalence of eidetic imagery and its educational significance.

London, University of, Bedford College. Part played by imagery in learning.

London, University of, University College. An experimental contribution to the function of imagery.

INDIVIDUAL STUDIES.

Hull, Municipal Training College. Individual and comparative child studies.

London, Froebel Educational Institute. Detailed studies of behaviour of individual children in the nursery class.

INFANCY AND EARLY CHILDHOOD.

Birmingham, University of. Studies in the psychology of early childhood.
Darlington, The Training College. Study of progress of nursery school and non-nursery school children through lower stages of elementary school ; Colour preferences of children between five and seven years and seven and eleven years respectively.

Leeds, University of The reasoning of children from six to eight years of age.

London, University of, Bedford College. Emotional development of young children ; Children's thinking.

London, University of, University College. Factor studies of the pre-school child.

Nottingham, University College. Development of language in young children.

Sheffield, University of. Children's vocabularies.

South Wales, University College of, Training Department for Women, Cardiff. Study of the characteristics of infancy.

Strawberry Hill, Middlesex, St. Mary's College. Complete vocabulary of boy of four years of age.

PHYSICALLY DEFECTIVE AND MENTALLY RETARDED CHILDREN.

Bingley, The Training College. The education of physically defective children.

Edinburgh, University of, George Combe Psychological Laboratory. Intelligence tests for the blind.

Leeds, University of. A comparative study of physically defective children of various types.

London, Child Guidance Clinic, Jewish Health Organization. Relation of mental retardation to delinquency.

London, The London Child Guidance Clinic. The bearing of emotional problems on educational retardation.

London, University of, London Day Training College. The education of the backward child.

Manchester, University of. Range of homogeneity of ability in normal and defective children.

Manchester, University of, Department of Education. Investigation of partial deafness in children and adults ; Correlation of hearing for pure tones with hearing for speech ; Relation of dumbness and defects of speech to organic and to functional deafness ; Investigation into methods of educating the partially deaf.

PSYCHOLOGICAL STUDIES OF EDUCATIONAL METHODS AND MATERIALS.

Edinburgh, University of, Department of Education. Comparison of broadcast, gramophone, silent reading, and oral lessons ; Measurement of the value of oral composition as a teaching method ; The improvement of methods and materials in native African schools.

Hull, Municipal Training College Psychological study of value of craft work for school children, adolescents in industry, and adult women respectively.

Leeds, University of. Psychological tests in relation to achievement in geography.

London, University of, London Day Training College. Method of teaching biology ; Methods of teaching English ; The teaching of science to the Chinese.

PSYCHOLOGY OF LEARNING AND TRANSFER OF TRAINING.

Birmingham, University of. Formal training : an historical and critical review with a re-examination in the light of modern psychology.

Cambridge, Psychological Laboratory. An analysis of learning curves ; " Whole " method in the learning of skill.

Hull, The Training College, Beverley Road. Investigations to determine : How much of children's learning by visual imagery is really such, and how far it consists of translating visual images into other images or ideas, mainly by association ; How far the accepted relations of the global and partial methods of learning are absolute, or how far they depend upon individual variations in retentive power ; How far definite appeals to " original thought," e.g., in the teaching of literature, are superior to formal routine work in their inducement to independent thinking on the part of the children.

London, University of, Bedford College. Part played by imagery in learning.

London, University of, London Day Training College. The transfer of effects of science training.

London, University of, University College. Transfer of training in acquiring the grammar of a foreign language.

Sheffield, University of. Analysis of the learning curve.

SPECIAL ABILITIES AND DISABILITIES.

ARTISTIC AND CREATIVE.

Bangor, The Training College. An investigation of laws governing the artistic and constructive work of young children.

Edinburgh, St. George's Training College. Rhythmic abilities and their relation to education; Preliminary studies of practical and artistic abilities.

Hull, Municipal Training College. Study of creative ability.

London, University of, King's College. Mental factors in æsthetic creation and appreciation.

London, University of, London Day Training College. Growth of æsthetic appreciation.

South Wales, University of, Training Department for Women, Cardiff. Literary appreciation.

MATHEMATICAL.

Bangor, University College. Psychology of mathematical thinking.

Edinburgh, University of, George Combe Psychological Laboratory. Methods of determining mathematical ability at an early stage in post primary course

London, University of, London Day Training College. The foundations of elementary geometry—an experiment in scientific method.

Reading, University of. An enquiry into the relations of arithmetic and geometric abilities.

PRACTICAL.

Edinburgh, St. George's Training College. Preliminary studies of practical and artistic abilities.

Leeds, Yorkshire Training College of Housecraft. Research into the nature of ability in cookery.

London, University of, University College. Comparative value of certain verbal and perceptual tests and their relation to tests of practical ability.

REMEDIAL TREATMENT.

Brighton, Municipal Training College. An investigation into possible remedial treatment for defects in spelling and arithmetic among training college students.

London, The London Child Guild Guidance Clinic. The nature and importance of certain specific factors in cases of reading difficulty.

London, University of, Bedford College. Eyedness and handedness.

London, University of, Goldsmith College. An investigation into spelling ability and disability of training college students.

STATISTICAL STUDIES.

Birmingham University of. A statistical enquiry as to the correlation of school and university successes.

Edinburgh, University of, Department of Education. Inquiry into absolute scale values for test items; Mathematical enquiries into problems of sampling.

London, University of, University College. A study of the distribution of tetrad differences for a large number of intercorrelated sub-tests of "g."

Manchester, University of, Department of Education. Application of quantitative methods to the study of speech defects.

Nottingham, University College. A psychological study of mathematical theorems bearing on the problem of the nature of intelligence.

Sheffield, University of. Correlation and Mental Factors.

VOCATIONAL GUIDANCE AND SELECTION.

Durham, University of, Armstrong College. Employment psychology.

London, National Institute of Industrial Psychology. Research in progress in Birmingham, Borstal, and in Fife; Occupational analysis of secretarial work, nursing, advertising, hotel management, factory assembly, and motor driving.

BOOK REVIEWS.

The Triumph of the Dalton Plan: By C. W. KIMMINS, M.A., D.Sc.,
and BELLE RENNIE. (Ivor Nicholson and Watson, Ltd. Pp. 223. 6s.)

The title of this book is a challenging one, but it must be admitted that the contents of the book go far to justify the claim that the Dalton plan has triumphed at least in one sense; for many schools, in various parts of the world, which have given the plan a fair trial have been satisfied and even delighted with its results. Such satisfaction has been shown, and the value of the plan has been appreciated, not only by teachers but also by pupils. This is indicated in an interesting and, at times, very entertaining way by the results of the questionnaire given in a preparatory school of boys of the ages of nine to fourteen. These boys were unanimously in favour of continuing the Dalton scheme; and it is remarkable how closely they penetrate to the root principles of the scheme. Most of all they seem to appreciate the ability to work at their own speed, to go on ahead of others, or to spend longer on points of difficulty instead of hurrying on with the whole class and leaving essential points only inadequately grasped. There are also frequent signs of great appreciation of the freedom to work at a thing when one is "in the mood" for it. This appears rather more strikingly perhaps than one would have anticipated. For instance D.C.P.C. (age 12) writes: "In olden days a boy might wake up in the morning absolutely fed up, say, with Latin. But on consulting his time-table he would find he had two or three Latin lessons which would probably put him in an awful mood and, consequently, make him do bad work all day. But under the Dalton plan if you feel fed up with a subject you need not do it, and, perhaps, after you have been working at a more interesting subject, it will put you in a good mood, and, later on, when you go and do Latin, you will find plenty of interest in your work."

A critic would, no doubt, reply that, of course, boys would like any scheme that allowed them to have an easy time. The records of a number of schools, however, which are reported in this book show that judged by objective examination tests, the Dalton plan may prove even superior to the ordinary class teaching organization.

Not that the supporters of the Dalton scheme would admit that examinations are the final test of education. Heaven forbid that they should! But the possibility of the widespread adoption of the scheme is, no doubt, greater if it be recognized that examination results do not necessarily suffer by its adoption.

More important, however, according to the writers of this book, are some other effects of the adoption of the Dalton scheme, especially the improvement of the pupil's attitude towards study, a quickening of interest, and an improvement of the relations of pupil to pupil (partly through the lessening of competition), and especially of pupil to teacher.

One very useful characteristic of the book is the discussion of the relation between the Dalton plan and some recent developments in the organization of education in this country. For example, some of the main recommendations of the "Report on the Primary School" are discussed, and it is argued cogently that the Dalton plan will go a long way to meet some of the main contentions of that Report.

The earlier part of the book gives a brief history of the beginnings and further developments of the Dalton plan; and later chapters deal with its social implications and moral influences.

The book is undoubtedly a timely one, for though Miss Parkhurst's treatment of her own scheme remains of unique value and of historic interest, a book showing especially the recent advances of the Dalton plan in this country was greatly needed. The volume is also most attractively produced. We must, indeed, congratulate the publishers as well as the authors. It is most lucidly written, in a style which should make it welcome to parents and others interested in education as well as to teachers and students in training.

C.W.V.

La Science du Caractère: By Dr. W. BOVEN. (*Collection d'actualités pédagogiques*, Delachaux et Niestlé, éditeurs; Paris et Neuchâtel.) Pp. 351. 8 francs.

Character is here presented as the product of two factors—the human being and his environment. The factors and their product are envisaged in broad and general terms, although the ever-present idea of depicting an organism intent upon a task tends to magnify the bodily character at the expense of the mental. But we are not individual himself when we study his reactions to the forces which produce, fashion, cripple, or guide him. Intuition is added to the usually accepted methods of science, but the author's use of it seems to amount to little more than the recognition of the value of sympathy and imagination in a scientific study.

In expounding the structure of character Dr. Boven mainly employs the genetic method. He finds three levels of character. The first—the "dispositions"—is attained through the co-ordination of the three primitive systems, the vegetative, developed in the foetal life, and the motor and the sensory, developed in the early months. Thus arise seven fundamental dispositions: Need (mainly the dependent attitude), power (domination), pleasure, pain, lack of adaptation (oscillation of opposing tendencies, passing into doubt or fear), tension (passing into anger), and sympathy, which the author believes to be of alimentary rather than sexual origin. Differences of character are essentially differences in the combinations of these fundamental attitudes. The second level (the "traits") gives the child at the age of two or three years some idea of the self and of their modification in and by life, the self and of the external world. Out of repression, and unconscious hold certain ideas (*refoulement*). The third level (the "lineaments") represents the highest personal, social, and intellectual elaborations of the traits. The interdependence of intelligence and character is emphasized. Further chapters discuss the possibility of measuring aspects of character, and the influence upon it of bodily factors, heredity, environment, development, race, sex, diseases, and pathological conditions.

In his final chapter Dr. Boven deals with education. To view life as the struggle of man with his environment is more likely to limit education to the better equipping of the pupil for the life struggle than to regard it as a means of influencing and liberalizing human nature itself. Dr. Boven's main assistance of any element of character to education is proportionate element; education works mainly upon the lineaments and the he is at pains to enumerate ways in which education may It may reinforce, annul, enhance, inhibit, stem, sublimate, allure, or limit their manifestations. In reading a book which brings together many diverse ideas, and which utilizes freely the work of French, German, Italian, and American writers, one is struck by the absence of reference to the contributions made to the subject, or to aspects of it, by such English writers as Shand, McDougall, and Spearman. And a discussion of Gesell's and Watson's experimental work upon young children, or of Mrs. Isaacs' pedagogical experiments, might have thrown light upon the ways in which education may diagnose and influence the deeper forces of character. W. J. McC.

The Experimental Study of Reading: By M. D. VERNON, M.A. (Cambridge University Press. Pp. 178. 8s. 6d.)

Interest and Ability in Reading: By ARTHUR I. YATES. (Macmillan Co., New York. Pp. 264. 6s. 6d.)

These two books form a very interesting survey of our experimental knowledge of reading and of the methods by which children can be most easily taught to read. Miss Vernon's careful study of the experimental work connected with the psychology of reading is largely concerned with such topics as eye movements, fixation periods, and the relation between reading perceptions and perception in general. The book should be invaluable to any one who wishes to study the experimental work on these topics and to carry the work farther himself.

Professor Yates is interested in teaching children to read, and his experiments are directly educational. It is very cheering to find the results of experiment entirely supporting kindly common sense. There was a time when the five-year old starting to read learnt his alphabet and then plunged straight into the first chapter of Genesis. This was succeeded by a dreary age when children read "all the two-letter words in the English language" and progressed to reading by such nonsensical stages as "Am I an ox? No, I am on an ox."

Professor Yates believes that the path to reading lies through abundance of easy meaningful material, which is closely correlated with the children's interests and activities. The stories that are read must not contain too many new words; they must deal with animals, fairies, postmen, and other things that children like, and they must contain directions for activity. There must be tests of comprehension which are in the nature of puzzles; and the dull, meaningless "word study" which occupies so much time in schools should be largely abandoned. If all reading books were constructed on Professor Yates' scheme schools would be happier places for both teachers and pupils. M.S.

Anger in Young Children: By FLORENCE L. GOODENOUGH. (University of Minnesota Press, Minneapolis. Pp. 278. \$2.50.)

This book is an account of a very useful attempt to apply quantitative methods to the study of the occurrence of anger in young children up to the age of six or seven. In view of the fact that only forty-five children were studied in all the generalizations as to different ages are necessarily very uncertain. But the book describes work of a pioneer type, and its chief value lies in suggestions that will be given to other investigators for more extended work. So far as this group of children is concerned the observations, which were made by a selected group of parents, show that the most frequent outbursts of anger occur at about the age of a year and a half, and that after two years of age they occur more frequently among the boys than the girls. The greater frequency of anger also with the lapse of time after a meal, and under conditions of imperfect health, are also suggestive, as is also the idea that anger occurs more frequently where the adults in the house are more numerous. The figures here, however, seem to me uncertain, and in particular, as the author points out, this apparent increase may be due more to the influence of servants in the household. The exposition in the book is remarkably clear and there is in addition a useful survey of the results of other observers given in the form of notes in the bibliography. C.W.V.

Personality and Social Adjustment: By ERNEST R. GROVES. (Longmans, Green and Co., Ltd. Pp. x+353. 7s. 6d. net.)

Is a second edition of a book that first appeared nine years ago. It is a clear and frank discussion of the effects of traditional experience as a means of moulding personality, it is entirely sympathetic of the subject treated, and while it points directly to what must be true of the blunders that are possible in the making of character it is rich in constructive suggestion.

Some of the chapters are outstanding even when all are good. The present writer feels that those dealing with self-assertion, the inferiority complex, and phantasy are among the most valuable and illuminating. There is much sage counsel set forth in a style that can surely be understood by all classes of readers, so that the book should gain a wide publicity and be the means of throwing light on many family problems—perhaps in time to prevent serious blunders in dealing with them.

Although the book does not set up a text-book atmosphere in the reading, an appendix of about thirty pages suggests (a) topics for discussion, (b) topics for report, (c) a bibliography in connection with each chapter, and so assists not only the student, but anyone who develops specific interests while perusing the book. A.P.E.

Philosophies of Beauty: By E. F. CARRITT. (Oxford: Clarendon Press. Pp. 334. 15s.)

The sub-title of this book indicates its range, namely, "From Socrates to Robert Bridges, being the Sources of Æsthetic Theory." Mr. Carritt, having expounded his own views on æsthetics in his book "The Theory of Beauty," has here prepared for the student of æsthetics a series of quotations from philosophers and others who have written on the subject of beauty. The quotations are long enough to give a substantial idea of the point of view of the writer concerned, and they also seem to the reviewer to be admirably chosen. It might be argued that a book which deals with the sources of æsthetic theory should not entirely exclude some account of the considerable work that has been done by the experimental study of the psychology of æsthetic appreciation, not only in this country, but in America, Germany, and elsewhere. However, no doubt the author would regard all this as excluded through his main title "the *philosophies* of beauty." One very useful point about the book is the frequency of cross references from one writer to another, and undoubtedly the volume is a most useful one for the student of the history of æsthetics.

C.W.V.

Boys in Trouble: By MRS. LE MESURIER. (Murray, 6s., pp. xvii+292.)

This book does not profess to be a psychological treatment of juvenile delinquency, but it is written by one who obviously has a knowledge of some of the best recent psychological studies of the subject, and who approaches the subject from a very broad point of view, and with an alert mind and very keen sympathy for the subjects of her study. Mrs. Le Mesurier has in addition a tremendous advantage in having been a leader of the women workers in the boys' prison in London, and her book throughout shows evidence of first hand acquaintance with the details of individual cases. She deals seriatim with such subjects as causes of crime, personal defects, studies of individual cases and alternative forms of treatment, including probation and Borstal. The book is a most readable one and can be warmly recommended as an introductory study to delinquency among boys, and the whole problem of treatment of the juvenile delinquent.

The Children We Teach: By SUSAN ISAACS, M.A., D.Sc. (University of London Press. Pp. 175. 3s. 6d.)

The substance of this book has already appeared in a series of articles in *The Teacher's World*. It is a pleasantly written book, and deals with various aspects of children's social and intellectual development. There are chapters on the differences between children, social life in the infants' school, loving and hating, the child and the curriculum, etc. The treatment should interest teachers and students in training, for whom the book is intended; and many parents might find the non-technical style of the book attractive. Mrs. Isaacs is an expert on her subject and all she has to say commands respect.

M.S.

Psychology and Advertising: By A. P. BRADDOCK, M.A., B.Sc. Pp. 246. (Butterworth and Co., Ltd., London. 7s. 6d.)

This book is an excellent introduction to the study of modern psychology and the application of its principles to the design of advertisements.

Each of the chapters deals with one of the main topics of the science and concludes with illustrations and criticisms of the present day methods of advertising.

The subject matter is well arranged, and the author is to be congratulated on the lucidity of his exposition.

The book makes easy reading, and although it is primarily intended for the business man it should make a strong appeal to the large section of the public interested in elementary psychology for its own sake.

W.G.E.

Studies in Modern Language Teaching. (New York: The Macmillan Co., 1930. Pp. xxxi+491.)

This is a further and very useful volume in the series of "Publications of the American and Canadian Committees on Modern Languages." All those who are interested in the position of, and method of teaching, foreign languages in schools and universities, are deeply indebted to this Committee for its extensive enquiries and voluminous reports, though possibly some of the latter might have been abbreviated with advantage. The present volume is one of the most important and begins with one hundred pages upon the history of modern language teaching in the United States. Of special psychological interest are Sections 2 and 3. The former deals with the influence of the study of modern languages on the development of various abilities in English. Experiments with groups of pupils suggest that the study of foreign languages cannot be defended on the ground that it will always help the study of English. It is correlated with improved speed and comprehension in the reading of English, more particularly in abler pupils, but it is also correlated with greater weakness in punctuation and in the discovery of faulty sentence structure, this being specially true of the weaker pupils. Section 3 deals with the influence of the beginnings of French on the acquisition of vocabulary in English, and here the figures suggest that the pupils studying French are inferior to those studying Latin and to those studying no foreign language.

It would seem possible here, however, that the influence of selection has not been fully allowed for, in spite of the fact that the groups studied, about 200 or more, were of approximately equal general intelligence. It is conceivable that those choosing Latin had better specific linguistic abilities. The matter is well worth further study.

Another chapter of great psychological interest is Chapter 11, on the study of achievement in French and Spanish, and factors that affect it. Perhaps the most interesting result here gained is that the previous study of Latin has no greater advantage than previous study of Spanish for success in French; and what is still more surprising, the previous study of Latin was not more advantageous than French for success in Spanish. Obviously much here will depend upon the methods of teaching followed. On the whole there was clear evidence of the influence of previous language study on the study of the second language, which confirms what would be generally expected; but if the one foreign language is studied only one year, there is little "transference" shown in the acquisition of the second foreign language. C.W.V.

The Practical Parts of Lancaster's "Improvements" and Bell's "Experiment." Landmarks in the History of Education, edited by DAVID SALMON. (Cambridge University Press. 6s.,

The Introduction, occupying about forty-five pages of this book, gives sufficient outline of the work and lives of Lancaster and Bell to enable the reader to form a fairly clear picture of each of these two men. Neither is quite the hero he has often been painted, it seems impossible that people with such dissimilar temperaments could agree together for long; when Mrs. Trimmer comes into the field, one feels the crisis has been reached and the Lancaster-Bell quarrel, whatever its origin, has reached a stage when reconciliation has become impossible. Yet had this not been so there would have been much more delay in providing means of education in the nineteenth century than actually was the case!

The Editor has used the Third Edition of Lancaster's "Improvements" (1805). We see the irrational methods of teaching reading and arithmetic—the ruling spirit is economy. There is an account of the administrative machinery for class recording and awards which is interesting if only as a relic of the past.

The Fourth Edition of Bell's "Experiment" is drawn upon for the last section of the book. The methods and routine work of the Madras School are brought before the reader, who can easily see for himself the points of difference in method between Bell and Lancaster; chief among these is the important difference in the employment of monitors. A.P.B.

Education in Denmark: Edited by A. BOJE, E. J. BORUP, and H. RUTZBECK. (Oxford University Press. Pp. 290. 7s. 6d. net. Mr. Milford.)

Denmark differs greatly from the countries of whose educational systems we are accustomed to hear more. Its agricultural occupation will to some extent modify its educational organization, and taking this together with the popular traditions one is prepared for a somewhat different outlook.

The State controls, but what arises from the description before us is the interest taken by the parents and the vigorous life of the folk schools, as part of a comprehensive system of essential services designed to form what is termed the "intellectual basis of a democratic commonwealth." Private endeavour is assisted by grants from the State, which also contributes liberally to practically all types of schools, and in exercising its control does not appear to press upon them unduly.

The book is composed of accounts given by several different persons of the special activities in which they are interested. Some years ago Miss Campbell gave an account of the "Danish Folk Schools," reviewed then in the *Forum of Education*, but the book now before us has a much wider scope and in nearly three hundred pages contains information which will be appreciated by students of comparative education.

It is a pity the book is not better bound. The price (7s. 6d.) is a high one to pay for a book on which more must be expended before it can be put into circulation. The reviewer's copy is already coming to pieces, and publishers might with advantage consider the point raised.

A.P.B.

The Teaching of Biology: A Handbook for Teachers of Junior Classes: By E. M. POULTON, D. ès Sc., M.Sc. (Methuen and Co., Ltd. Pp. 244. 6s. 6d.)

This book has appeared at an opportune moment. Biology, as a subject of the curriculum is adopted at a rapidly increasing number of schools. It is at the stage of an educational experiment and the results are weighed in the balance of criticism. Biology has become a unified science of great practical and cultural value, and as such demands a place in any scheme of general science, but it has yet to be determined in what form it best serves the purpose of bringing the pupil into contact with the realities of life. At the same time, it is thought that the nature-study which originated some forty years ago, displacing the object lesson, must be brought into definite relation to the more specialized forms of biology. "The Teaching of Biology" is a contribution to these considerations, and will be of service to teachers concerned with the problem involved. In its exposition of the values and the aims of biology it provides a definite point of view from which the subject might be studied, in further chapters it suggests methods of procedure, and the second part of the book contains a complete scheme of seasonal studies and practical notes of lessons. The book contains a very valuable bibliography. A reader of the book will be struck by the thoroughness, accuracy, and logical arrangement of the text. It may be a little difficult to see the wood for trees and to distinguish the main issues from the details, so carefully worked-out as to appear almost laboured. The reader might also wish for more inspiration in a difficult task, for greater freedom and variety in the treatment of the subject-matter in the lessons, for stimulus to self-activity and investigation, and for a clearer view of the trend of the teaching towards a conception of biological values. These remarks may appear hypercritical in consideration of the undoubted practical value of the book.

C. von W.

Deutsche Jugend: By J. J. FINDLAY. (Gregg Publishing Co., London. Pp. 72. Art paper, 2s. 6d.; cloth, 3s.) With companion gramophone records, 6s. each.

This book is described in its sub-title as *Eine Einleitung in das Leben und die Sprache des Deutschen Volkes*. It is intended for use with half a dozen double-sided gramophone records (made by the Columbia Gramophone Company), the whole forming material prepared in accordance with the principles of the teaching of modern languages expounded by the author in his "Modern Language Learning."

The booklet is very well arranged, and there are numerous illustrations. The gramophone records work in admirably with the book, reproducing a major part of the conversations and songs. Above all, they are based on "real" situations, spoken, acted, and sung by real Germans. This sense of reality will surely add a keen interest in the classroom or home. The addition in the sub-title of the words *in des Leben* is not haphazard. In particular, the introduction of the pupils to some of Germany's loveliest songs of the people is of value here.

Records and book should form a valuable supplement to first-year German studies; especially we should say towards the end of that year—even if the teacher does not feel able to make them the sole or main centre of the work.

Enriching the Curriculum for Gifted Children: By OSBURN and ROHAN.
(The Macmillan Co., pp. 408, 10s.)

This book describes an experiment, lasting five years, on differentiated instruction in a number of ordinary schools in the city of Appleton, Wisconsin, together with an account of the principles upon which the experiment was based.

The first part consists of a discussion on the principles underlying a curriculum adapted to the interests, needs and abilities of average and of above-average pupils. The authors then show in detail how the regular schemes of work in the schools of Appleton are carried through, but how at the same time provision is made for gifted children so that their interests are gratified and their energies expanded in profitable ways—without imperilling in any way the educational advancement of the normal pupils.

Teachers who realize the dangers of segregating gifted pupils or of extra rapid promotion of such pupils into classes where the other pupils are considerably older will be interested in this account of an attempt to avoid these dangers, since gifted pupils are not removed from their proper social groups and adequate provision is made for their intellectual development.

The conditions in American schools, though different from those in many English schools, are not so different that teachers will not find useful, practical and thought-provoking suggestions in this volume.

A.E.C.

The Art of Teaching English: By J. H. FOWLER. (Macmillan and Co., pp. 218, 5s.)

This book consists of two papers on "English Literature in Secondary Schools" and "The Writing of English," originally published by the English Association, and a number of lectures and papers on various important problems which face every teacher of English. Taken together the papers present a reasoned statement of the author's theory and practice in the teaching of English. Those who are familiar with the author's contributions will welcome their collection into one volume; others will find in the book thoughtful and stimulating suggestions, based not merely on a deep appreciation of English literature, but also on a sound knowledge of the principles which underly sound methods of teaching.

A.E.C.

Speech and Voice: By G. OSCAR RUSSELL. (New York. The Macmillan Co. 1931. Pp. 250+ix. 17s. net).

Dr. Russell, the Director of Phonetics Laboratories and Speech Clinic, Ohio State University, has written an extremely interesting book. In the main it is designed as a practical manual for teachers of the deaf, teachers of singing and voice production, and for students mastering the intricacies of pronunciation of foreign tongues. The book is unique in its illustrations, consisting of excellent X-ray photographs, and its speech and voice organ charts. Phoneticians will be critically interested in this excellently produced volume.

An Experimental Study of certain Factors affecting Transfer of Training in Arithmetic: By JAMES ROBERT OVERMAN. (Baltimore, Warwick and York. 1931. Pp. 235+vi.)

The latest addition to the Educational Psychology Monograph Series deals with an interesting class-room investigation carried out "to study the effect of instruction on three types of examples in two place addition upon the pupil's ability to handle closely related types in three place addition and in two and three place subtraction, and to determine whether the amount of transfer is a function of the method of teaching."

Briefly the result may be summarized that "large and useful amounts of transfer can be obtained if the securing of the greatest possible 'spread' is made a conscious aim of instruction, and if the methods of teaching are intelligently chosen and employed with that aim in view."

An appendix gives the tests and directions issued to teachers. It would be useful if the experiment could be repeated in many different districts in this country.

Some Aspects of Education in the United States of America: By K. S. CUNNINGHAM and G. E. PHILLIPS. (Melbourne University Press, in association with Macmillan and Co., Ltd. Pp. 104. 2s. 6d.)

Part I of this little book, issued by the Australian Council for Educational Research, is written by Dr. Cunningham, and starts with a comparison of administrative problems in the United States and Australia, and goes on to describe some of the outstanding features of American education with comparative references to Australia, ending with a summary of suggestions for Australia. Part II is written by Dr. Phillips and consists of an account of educational research in the U.S.A., followed by some suggestions for the organization of an Australian Research Institute. There are two appendices, one on a Unit of Study at Lincoln School, illustrating the breaking down of subject barriers and the other on the occupational possibilities of the feeble-minded. Both should be pondered.

B.C.E.J.

Primary Education by Correspondence: By K. S. CUNNINGHAM. (Melbourne University Press, in association with Macmillan and Co., Ltd. Pp. 91. 2s. 6d.)

Another issue of the Australian Council for Educational Research, this is an account of a real romance of education, the education of children in remote regions of Australia out of reach of ordinary schools. It makes very interesting reading.

B.C.L.J.

The Making of Adult Minds in a Metropolitan Area: The Brooklyn Conference on Adult Education, Frank Lorimer, Research Director. (The Macmillan Company, New York. Pp. 245+xiv. 10s.)

An outcome of a collective effort to secure information about facilities for adult education in Brooklyn, this work may be recommended as an interesting addition to the library of a student of comparative education.

B.C.L.J.

A Study of the Ohio Compulsory Education and Child Labor Law: By ARCH O. HECK. (The Ohio State University, Columbus, Ohio. Pp. 210+xii. \$2.00.)

This book constitutes another useful addition to the data available for the student of comparative education.

B.C.L.J.

A Summary of Reports on the Modern Foreign Languages : Compiled by ROBERT HERNDON FIFE. (The Macmillan Company of New York. Pp. 261.)

This is issued by the Committee for the study of the teaching of modern languages. It includes an index to the reports, more detailed reviews of some of which have been given in this *Journal*. The very extensive nature of some of those earlier reports made them cumbersome to deal with, and this summary is a most welcome guide which will in its turn increase the value of the larger reports. There is also a useful index to all the reports.

The Measurement of Nervous Habits in Normal Children : By WILLARD C. OLSON. (The University of Minnesota Press, Minneapolis. Pp. 97. \$2.)

This is a useful contribution to the study of child psychology. Its earlier part includes a careful consideration of the methods of study, including the reliability and constancy of the measurements of nervous habits. This is followed by a chapter dealing with the distribution of nervous habits in children, including the relative frequency of different habits, sex differences in nervous habits, and their relation to age. The conclusion is reached that nervous habits are definitely more frequent among girls than among boys. An especially interesting chapter deals with the genesis of the habits, including such causal factors as imitation and fatigue, and some statistics bearing upon Freud's hypotheses as to oral habits—his theory receiving no support from the data here given. The author concludes that family predisposition and conditions of nutrition are important factors in the causing of nervous habits.

Child Care and Training : By MARION L. FAEGRE and JOHN E. ANDERSON. (The University of Minnesota Press, Minneapolis. Pp. 275. \$2.)

This is the third and revised edition of a book which grew out of the extension courses offered at the Institute of Child Welfare of the University of Minnesota. Much guidance in the preparation of the volume was given by the questions asked by parents themselves. The authors are not only psychologists but are themselves the parents of moderately large families (as families go nowadays), and the treatment is marked by common sense restraint as well as by a scientific outlook. The book is rather one of practical value for parents and teachers than an attempt at a systematic psychology of childhood.

SOME PROBLEMS OF ADJUSTMENT IN THE EARLY YEARS OF A TEACHER'S LIFE.

By MARGARET PHILLIPS.

I.—*Introductory.*

II.—*Causes of maladjustment considered :*

- (1) *Personal difficulties.*
- (2) *Unsuitable placing in first posts.*
- (3) *Conditions of work.*
- (4) *Class management and difficult individual pupils.*
- (5) *The attitude of older members of staff to younger colleagues.*
- (6) *The educational outlook of an older generation.*
- (7) *Social conditions in the school area.*
- (8) *Insufficient leisure.*
- (9) *Financial difficulties.*

III.—*Summary of Conclusions.*

"Is there anything surprising in one who passes from divine contemplations to the evil state of man, misbehaving himself in a ridiculous manner; while his eyes are blinking and before he has become accustomed to the surrounding darkness? . . . Anyone who has common sense will remember that the bewilderments of the eyes are of two kinds and arise from two causes, either from coming out of the light or from going into the light. . . . There is reason in supposing that the finest natures, when under alien conditions, receive more injury than the inferior, because the contrast is greater."—PLATO: *Republic*, Book 7.

"Why do people say that teaching is a sheltered occupation? It seems to throw you into the midst of all the problems the world has."—A CORRESPONDENT.

I.—INTRODUCTORY.

A GOOD deal has been said of late, sometimes rather vaguely, concerning the frequency of breakdowns among young teachers. *Inter alia*, the *Schoolmaster* for April 7th, 1932, reports that at the annual conference of the National Union of Teachers, a resolution was moved demanding "an immediate and thorough investigation into the causes of increasing breakdown in the health of young teachers." "The cause," said the mover of the resolution, "must be something which required a very deep

and searching enquiry.' In the ensuing discussion it was reported that a Sub-Committee had investigated 300 cases of breakdown among teachers, but that "nearly half of these returns gave no indication which would guide the Executive in coming to any conclusion relative to causes."

It may be that Insurance Offices could confirm or refute the suggested increase in numbers. Meanwhile it may be useful to consider the nature and possible causes of that storm and stress which young teachers undoubtedly often undergo, and which, while not necessarily producing a recognizable breakdown, may yet bring such a possibility dangerously near.

In the course of a fairly extensive correspondence, extending over the past ten years, with young teachers from four different Training Centres (University Education Departments and Two-year Colleges), I have come to the conclusion that the cause is not single but manifold. I shall attempt to set out certain distinguishable factors in the young teacher's situation, and to illustrate each by quotations from correspondents—all trained between 1922 and 1932 and serving subsequently in elementary, "Central," or "Special" schools.

My evidence will throw no light on the number of breakdowns actually occurring. This is, as far as my experience goes, very small—even though my correspondents probably include a high proportion of those who find the early years difficult. Breakdown is in a good many cases averted by cutting the Gordian knot rather than untying it. For example, apart from certain women to whom marriage has clearly come as a release, I have known, during the past twelve years, teachers who have found ways out through industry, journalism, novel writing,* the theatre, librarianship, music, secretarial and clerical work. Many for whom the problems of, and conditions of work in, the ordinary elementary schools have proved too overwhelming, have adjusted themselves successfully to the smaller classes, pleasanter conditions, greater freedom or diminished responsibility of other branches of the educational service—in special schools; on "unattached" or "supply" staffs; as specialist teachers; in schools abroad; in private schools; as governesses in private families. Finally, many have been absorbed in pursuits closely akin to, and on the fringe of, the teaching profession—the ministry, the mission field, nursing, probation and child guidance work, and other forms of social work.

* The number of novels by ex-teachers presenting teaching in an unattractive light suggests that this way out is frequently found. It no doubt solves the problem for the writers, but it is at least unfortunate for the reputation of the profession in the eyes of the world.

For those who, without necessarily achieving complete adjustment, have yet continued to bear the heat and burden of the day, the causes of conflict most evident in the correspondence seem to group themselves under nine heads. One is tempted at first to say that there exist two main types of conflict—first, those peculiar to members of the teaching profession as such, and secondly, those common to all ambitious and tolerably well educated people in their early twenties faced with modern conditions of life. As one correspondent says :

“ Most of the depression and dissatisfaction manifested in teachers in their first few years is often seen in others who have undergone similar training and studies, but turned to other vocations. The teachers have tried to explain the cause as due to an undesirable head teacher, badly disciplined children, or poor buildings ; whilst others I know, who have entered business or social work, have found similar tangible deficiencies in their jobs.”

Or to quote another :

“ The sudden transition is no more trying, and often less so, than in other occupations, e.g., from the Universities to business or Civil Service careers—for after all, the training college course is *vocational*. The teacher has to face problems of adjustment to practical affairs similar to those which the majority of boys and girls have to face at fourteen, and everybody who has to earn his own living has to face sooner or later.”

But on closer examination the two types of difficulty are seen to interact so closely that this dual classification must be abandoned.

Just as it is possible to find parallels for a teacher's difficulties in other occupations, so it is possible to argue that none of the sources of conflict or tension to be considered is necessarily entirely to be deplored. “ Bipolarity,” we are nowadays being told, is a necessary condition of growth, both thought and action deriving much of their richness and vitality from tension and duality. As one of my correspondents puts it :

“ The workaday lives of all earnest teachers are a compromise between their ideals and a difficult world. If the ideals are lowered, then so is the daily compromise.”

Not the fact, that is to say, but the degree of tension, and the number of tensions simultaneously experienced, is the serious matter. To quote another correspondent :

“ After all, I suppose it doesn't matter where you first meet experiences, only when they come, they come in such a confusing lump ! ”

Or again :

“ The difficulties do not seem to arise from any one factor or circumstance, but rather from the hopeless muddle caused by the sudden and complete change of circumstances.”

One may in theory, that is to say, succour others while struggling to hold one's own head above water ; keep one's feet on earth, and one's head in the heavens ; recognize authority and yet retain one's independence ; be true to one's own generation and still work happily with the last ; deal effectively with large classes while retaining one's respect for individual differences ; build the New Jerusalem from materials which are a legacy of the Industrial Revolution ; live the good life on a salary calculated on the needs of the body. It would be easy, in fact, to write a pedagogic version of " If " and to maintain its theoretic practicability at all points ; but at twenty-one it seems hard to perform all these miracles at once !

II.—CAUSES OF MALADJUSTMENT CONSIDERED.

1.—The first danger appears to lie in the existence of personal difficulties of a kind to be intensified rather than relieved by the strains and stresses of vocational training, and subsequently of professional life.

Students entering a training college at the age of eighteen plus from the Sixth Form of a good school have, in spite of the pressure of examinations, entered into some part of the inheritance of the ages. But, though they may have entered in they have, generally speaking, not yet had time to enjoy. Their appetites have been stimulated rather than satisfied. Their curiosity about themselves and the world in relation to themselves is fully awake. They are at grips with the characteristic problems of later adolescence—personal and family relationships ; sex questions ; religious difficulties. They may be, at the most introverted stage of their careers, concerned largely with their own subjective psychological processes, incapable as yet of that " transference of interest from the subject to the object,"* that " action in direct correspondence with objective conditions and their claims,"* which is one of the conditions of successful teaching. With many of the best minds among them, this introverted phase may last normally and naturally far into, and even beyond, the two years of their college course, and it may be, in spite of the steadying influence of a vocation and the extroverted outlook of professional training, no easy matter for such students to achieve, simultaneously with their certificate, that state of mind which " finds adequate and appropriate play within the limits of the objectival situation.*

" Whatever one's difficulties, I think one is more restless, and feels more intensely, in the late teens and early twenties, than at any other time in life. This applies to everything, from needs and from disappointments, to satisfactions and accomplishments."

* Jung, *Psychological Types*.

From the point of view of the University Education Departments this need present no difficulty. The priceless advantage which they possess over the Two-year College is the advantage of time. They need not begin to focus—to concentrate on vocational problems—for another three years. But for the Two-year College, faced in many cases with students who are not so much potential shepherds as still hungry sheep themselves, the two horns of the dilemma are acute. Public opinion; disbursers, both central and local, of public funds; ask that the training colleges shall be "training" colleges in fact as well as in name. Henceforth they must meet as best they can the equally insistent demands of local authorities needing efficient teachers and students asking to be fed.

Hence it follows that a student's personal demands are by no means fully satisfied when the crowded vocational course is over and the time for entering upon a teaching career arrives. The difficulty may even appear to have been intensified by college training.

"Several people have complained that 'college' breaks down, or shakes and destroys, all the beliefs, ideas and ideals formed previously, without providing any corresponding constructive influence to relieve the mental chaos caused. The result is that the student leaves college and returns to the same environment as he left before training, but with all the mental associations broken or jarred. It is difficult to repress one's objections to minor matters of family life and thought which formerly seemed quite natural; but until some constructive work commences within, there seems to be no alternative support to which to cling. I experienced this struggle (although it had commenced before I left school) and for a time felt to be drowning my own individuality, by keeping peace and conformity at home by my pursuance of observances and modes of life. Meanwhile, a mental conflict was taking place, of which I was very sensitive, but of which my parents seemed scarcely conscious, and my friends never realized was there at all."

"The root of the trouble is that teaching has to begin at about the age of twenty-one, when the need and desire for learning is most urgent. At college, a broader view of life is revealed, after the comparatively limited outlook of the six years 'exam.' period preceding college, and then we are sent out to pass on details of a picture when we are just beginning to see what size canvas we have to deal with. We are thus in a false position, and its insecurity is the cause of much stress—it puts us on the defensive and prevents us from going forward strongly and with calm."

"We seemed to be racing time at college. Perhaps a two-year course is too short. We're just beginning to think when we quit the place. We are given a glimpse of what really studying a subject means—just enough to make us feel we know nothing and have never read a page of a book in a decent way—then we go, and find ourselves caught up in an everlasting round of school duties. We proceed to give lessons on things we don't know about, and so have little interest in. No wonder we soon decide that the task of

teaching in elementary schools is too enormous, and so slip into a rut and regard teaching as a means of obtaining a livelihood, and proceed to live when we get away from it."

Generally speaking, the more developed are a young teacher's professional ideals and sense of professional responsibility, the more vividly does she feel her inadequacy.

"If only teachers could have gone through this psychic re-modelling of themselves before they have the responsibilities of having to 'give out' to and help to mould the younger minds of others, many difficulties would probably be overcome."

"The very personal attitude of the young teacher as 'the teacher teaching' brings with it its own difficulties and emotional stresses, but this gradually changes to the healthier impersonal attitude of 'the subject being taught'—and the feverish attacks at teaching merge into steadier work."

"I am still amusedly watching the making of myself as a teacher. The processes are intricate and take long. It must be rather good to be a born teacher, for then one's attention can be more definitely turned outwards, it not being required elsewhere."

A further type of personal difficulty may be rather due to innate temperamental make-up than incidental to a particular phase of life. Teaching must always call for delicate and skilful creative work in the field of personal relationships—with one's pupils, one's colleagues, one's superiors; and all teachers are by no means born artists in the medium of human nature. Moreover, many of them are, again partly as a result of their college training, acutely conscious of this fact. Thus:

"Most of the things that go wrong in my teaching are due to my own repressions and fears. I'm fairly competent in the technique of presenting facts to children, but it takes me two terms to get on anything approaching friendly terms with the class as a whole. With individuals our relations aren't so strained, but with the class as a whole I can never let myself go . . . Now and then a moment comes when I am conscious of something within me that wants to rise up and go out to the children; but there's something stops it. . . . The glow dies down and I feel dull and miserable. I cannot wholly forget myself and just become a vehicle for something bigger. I'm afraid to look foolish, or to rouse laughter from others. And so I practise the roll of the silent onlooker—hoping it will give the impression of a deep wisdom, etc. Yet all the while I wish that I could 'go out' as I see others doing—express the life within me and feel that deeper contact with others—a sort of quickening of life which I sometimes notice when two people meet.

"It's a queer fact that I have never fully lived, because I have never dared, and that the only thing that prevents me from living freely and joyfully is my own fear of life. I'm ridiculously afraid of being hurt. And opening out, besides bringing freedom of being also lays one out to more hurts."

" Since I went to A—— I believe I have discovered what is wrong with me, and what will always prevent my being a decent teacher. I cannot condemn wrong-doing properly. A boy may do wrong in school—if it is something sly or uncultured he merely makes me feel ill and not want to look at him ; but five minutes after I can speak quite kindly to him. If it is something merely disorderly, such as talking or throwing something, I do not feel that he has done wrong, and regard it as perfectly natural that he should ! Even towards the most dirty little brat I feel kindly disposed. It's a terrible business, as all the while I'm like this I could never keep order in a class."

2.—To this general situation there may be added a further and, one feels, a relatively avoidable difficulty, i.e., the unsuitable placing of young teachers in their first posts. True, it is not easy to say with certainty how great is the age range of pupil to which any one student can temperamentally adapt himself, or for which he can be effectively prepared. And one must recognize that local authorities have their own difficulties. Nevertheless, it remains true that the placing of young teachers with some consideration for their training and for their age-preferences may make all the difference between success and happiness or the reverse.

Lack of such consideration may produce failure of courage at a moment when a confident attitude to life is all important :

" My first year was spent in an infants' school, where silence was the rule, where accommodation was poor, and apparatus nil. In addition to all that I found myself like a duck out of water with infants, and a complete and hopeless failure as a teacher of them. It was my first real taste of failure, and that in my job ! Result, an inferiority complex which took a long time to lose—if it is lost—and which hindered me when I was transferred to a senior school."

" I was trained as a junior teacher, and I wanted to teach children about eight years old. As soon as I became a responsible teacher I was sent to a class of thirty children—all about three years old. Thus I became a kind of nursery governess, teaching kindergarten work. This was all the more difficult, because, as I am an only child, I had had very little experience of young children, and so did not know how to cope with the many situations.

" Later I was sent to a much larger class in a better district. This time I had a class of forty girls, about twelve years old. Then I had the difficulty of adapting myself to the senior work, for which I had not trained."

Or it may lead to general disillusionment and disinclination for the profession :

" I want to teach elder girls ; that's the grade I'm really interested in. But there are no jobs of that type going, they are all held by ' experienced ' teachers. Hence I feel thoroughly out of tune in the work and would like to get out of it. It's not that I'm lazy ; I work hard and get through satisfactorily, but with no real satisfaction to myself."

The same considerations hold good, at any rate to some extent—as regards students' preferences for the teaching of certain subjects. A favourite subject may be, for any student, a form of genuine artistic expression and spiritual release, while a subject which he knows himself incompetent to teach may be lamentably the reverse. "Nightmare" is the word most frequently used by my correspondents in this latter connection. It seems, therefore, worth while to re-think the whole question of specialization from the angle of the teacher as well as from that of the child.

"Part of our success at ——— was due to a modified form of specialization. We were not able to go the whole hog and take just our pet subjects, but we were saved much nervous energy by being relieved of subjects we disliked. I was able to take Art instead of Music. I knew just enough about Music to realize what a fool—yes, and a criminal, I should make of myself in a singing lesson. Later, at another school, I was forced to take singing for a short time, and I developed a complex about this lesson which spread over and was harmful to all my school work."

Here is a science graduate in charge of eight-year-olds :

"Class 10 is going to be a bore. But he's given me sole charge of the Science. That means two lessons a week with each of the four upper classes. These are all over twelve, and may prove interesting. Still, only eight decent lessons a week, oh damn! I'm going to make the Science a point of departure; there's a most elastic syllabus."

The tradition that the newcomer takes the lowest class in his school, irrespective of qualifications and training, seems, even nowadays, to die hard!

3.—Next, our young teacher may, at the outset of his career, be hampered by unfavourable conditions of work such as are provided by inadequate buildings and equipment. This type of difficulty is possibly relatively less serious; at any rate, when considered in isolation. And fortunately in this matter at least time is on his side.

"Modern education in modern schools! The playground is cobble stoned and very tiny. Forty-six boys can just magage to walk round in single file, and four files fit in so well that one can't help admiring the economical mind of the builder. I deliver commands from between two dustbins. Drill is laughable. At playtime two classes go out at a time. Jumping on the spot is the best form of exercise, or wrestling without moving the feet more than one pace to left or right."

"Books are practically non-existent in our school, and the specimens I have seen in my cupboard I would not touch with a barge pole, but it is surprising to me how well the children manage with one book between four—my cyclostyle is very nearly worn out through copying out my own books for the children."

In the following cases inadequate buildings are seen to be a contributory cause of more serious difficulties. For a teacher with whom class management hangs in the balance they may be fatally decisive.

" This year I have the same boys and we have one or two lessons per day in the big room. Here one ceases to teach or to educate. One only keeps the boys employed somehow. If those on the back row are bored with their work they turn and attend to some other teacher who is demonstrating a scientific law or discoursing on New Zealand. Teaching becomes a joyless affair and any living contact between teacher and class hard to maintain."

Or they may provide a gratuitous and unprofitable type of nerve strain :

" The only drawback this year is that I have to share a classroom with a thin girl who has just broken off her engagement and has a terrific voice. She is also a slapper."

The harm which may arise from this enforced intimacy of two or more (possibly incompatible) adult personalities is, of course, a favourite theme of the novelist, who takes—as a rule—boarding schools for his subject. It is less often realized that the crowded conditions of elementary schools may produce similar dangers. Dr. Helen Wodehouse, in her Presidential Address to the Froebel Society (January, 1932), promoted this " principle of distance " to the front rank of importance :

" I suggest that much hostility among human beings arises from a quite definite cause—the violation of a principle of distance. It seems odd to speak of an instinct for distance, yet something of the kind is as real as is the instinct for closeness. If human beings are to live happily together and to work well, they must have elbow room. Anger against direct frustration may be more endurable than the nervous irritability produced by crowding."

4.—We now reach what is probably for most young people the crux of the teaching problem—the management of large classes and the wise treatment of difficult individuals. The bearing on this problem of the temperamental and personal difficulties already discussed is obvious. One is inclined to wonder whether current educational theory is sufficiently realistic as regards the relationship likely to obtain between a teacher suffering from any of the personal handicaps already mentioned and a large class of children at an extroverted stage of development. One such situation has been well diagnosed by D. H. Lawrence in an early autobiographical poem quoted by M. Murry in " Son of Woman ":

I came to the boys with love, dear, and only they turned on me ;
With gentleness came I, with my heart twixt my hands like a bowl,
Like a loving cup, like a grail ; but they spilt it triumphantly,
And tried to break the vessel, and violate my soul.

And perhaps they were right, for the young are busy deep down at the roots,

And love would only weaken their under earth grip, and make shallow
Their hold on reality, enfeeble their rising shoots

With too much tincture of me, instead of the dark's deep fallow."

Here follow two correspondents painfully conscious of their personal inadequacy in a similar situation :

" I am in an awful school. The boys have no respect for anybody, not even the Rector. Their parents are no better ; probably they are the cause of the trouble. Boys and girls up to fourteen are publicly caned. It is a most revolting idea. This school will apparently go mad if they are not knocked about, so it's apparently my duty to begin bullying them. The thought is horrible. The great trouble is, I can't lose my temper ; it would be easier if I could. I feel most inclined to let them go to hell as soon as possible. At other moments, I get a burst of affection for a particularly bad boy, and have to bottle it ; in which case I probably try preaching to him, which is worse than futile. I am sure the Lord never meant me to do such degrading work as this ; I think I'd sooner black shoes."

" What you said proves all too true. I do neither myself nor the class much good by remaining, and although I'm rather attached to the class, the prospects of going up with them for another year (which is the arrangement) is just too awful—both for them and me. Out of school, and when we can treat each other as individuals and human beings, we get on well. But the presence of five problem children involves us in many painful conflicts, when we have to demand 'school behaviour.' And these conflicts are so futile, and only aggravate what they ought to cure."

Harassing as class management can be, the problem of the difficult individual looms in my correspondence even larger. Moreover, this type of problem is, I believe, at the moment on the increase. With the spread of the Child Guidance Movement—or rather with the dissemination of the ideas on which it is based—public opinion among young teachers is becoming increasingly conscious of, and sensitive to, the existence of the "maladjusted" child, while as yet the machinery is hardly in existence which may ultimately take this burden partly off their shoulders.

The following extracts illustrate this sensitiveness to the problem :

" Don't you think that we leave college with just enough psychology to make us very much alive to the danger of hasty treatment and yet we don't know enough detailed psychology to be able to deal with individuals very intelligently. Of course, college couldn't give much more theory because of lack of practical experience."

" To begin with : the problem of how to deal with the developing sex instinct in schoolgirls has been very much to the fore. One of our thirteen-year-old girls, an adopted child, played truant for a fortnight, during which

time she enjoyed herself very much—spent the time with a youth of twenty-one. Her mother—guardian, I should say—beat her, when it was found out, and turned her from the house. In any case, Gladys was quite beyond her mother's control, ever. Of course, we found another home for her, and since then she has come regularly to school, and seems to enjoy it—though she does little work.

"That, and one or two other experiences, have made me realize that I'm thoroughly incapable of tackling any such problem—incapable, because I seem unable to understand the varying emotions: incapable too, because I find I'm very much afraid, very frightened of the whole matter. At school, in every way, this aspect of the sex problem increases. All the girls seem precocious. I can do little to help, as I said, and I'm beginning to think that nothing can be done."

5.—It is in his attempts to deal with the above problem that the young teacher most often finds himself at variance with the ideas of an older generation. And this leads on to our next topic: the attitude of head teachers, and of older members of staff to young teachers. This problem reflects, of course, only one aspect of that "clash of generations," already considered, which is apparently to some extent the way of all flesh, a clash which the young teacher has already in most cases had to deal with in his home life, and which he now finds awaiting him in school:

"A thing established appears to have so much conviction, especially if it is a school with its masses of brickwork and secure notice boards outside, and its smoothly running time-tables, and its teachers who make it run smoothly, inside—that the young teacher's frail ideas which are hovering into expression have to pit themselves against the very strong forces of habit. An experimenter, coming into the midst of an established order of things, is not always welcome, because the new activity ruffles the smooth ease which has settled on those who literally never think. This friction of the old and new orders is partly responsible for the difficulties."

"Often the other teachers are several years older in years and experience, and owing to their constant references to this fact, cause the new member to feel that he is regarded as useless, and consequently he begins himself to feel inferior, or superior mentally to those around."

"When I started teaching, I felt that I had been equipped for an ideal school in happy circumstances, while for the miserable conditions in which I found myself I was wholly unprepared. In the first bewilderment and rebellion against the existing state of affairs, in the early days of a struggling school life, I wished that some warning of the various kinds of evils we might possibly encounter, had been given us. The position of head teachers, for instance, their unquestioned authority, how it might be abused, and the difficulties of steering a course acceptable to the one in command, and yet in accordance with one's own principles."

The decisive importance, for good or ill, of the relations existing between members of any staff is equally well illustrated by the following happier experience :

" My first school was in one of the worst of ——'s slums. Four of us, myself and three women, were drafted fresh from college to —— school. The head teacher was young and enthusiastic. He had been in the school long enough to discover that the existing staff, which included three fully qualified men receiving maximum salary, were not only content with existing conditions, but hostile to change. Had he, or any one of us newcomers, been left singly in such conditions, we should doubtless have sunk in that Slough of Despond. As it was, we brought a body of ideas from four different training colleges to a head teacher who had not lost enthusiasm as he gained experience, and we cleaned up the school. This shows that far more important than the school conditions is the attitude—the 'do-or-die' attitude (for one does become belligerent against things in general in a slum school!)—of the teacher himself, and the attitude of his colleagues, especially, indeed primarily, of the head teacher."

The following case, fortunately not common, but unfortunately not unique in my experience, introduces a further complication. It suggests, I think, that elderly men do not always make the best heads for young women—particularly in remote rural schools where staffs are small :

" Can you tell me what to do ? My head master has become such a rotter that I don't know how to deal with him, and I don't want to leave what is otherwise a thoroughly nice job. He is an elderly man with a daughter of twenty, and I think he takes advantage of my youth ! . . . This is the sort of thing that happens. The other day I was trying to deal severely with my class, who had done their homework very badly, and suddenly they all began laughing. I discovered Mr. —— standing beside me staring at me with his mouth and eyes wide open, and being funny ! . . . Last Friday he suddenly appeared beside me and cleared his throat in exactly the same way as I did and said, ' Now what does that mean ? ' . . . It isn't that I can't enjoy a joke, but he doesn't back me up, and he makes a fool of me before the girls . . . The whole thing seems absurd, but surely I will lose their respect and I won't be able to teach them or control them properly if he is continually interrupting my lessons to get a laugh out of them at my expense."

6.—In general, wherever the clash of generations becomes acute, it will be found to involve also, either as cause or effect, a divergence of educational outlook and practice. Conflicting policies as regards class management and the treatment of individuals often serve, as has been said, to reveal the extent of the gulf.

" I wonder what you would feel if you could see my head master ' at work.' He seldom has the cane out of his hands—he makes me squirm. I have a dear child in my class who is so excitable and thrilled with everything

I do, but she cannot keep still. I love her for it, she is so impulsive. Can you imagine what it feels like, then, to have the head master constantly coming in to cane her because her hand is not up straight, or because her feet have found a forbidden ledge of the table? This is a sore subject—I must leave it."

"This has been such an eventful term for me. I have been a really rebellious child. Some time back, my head master seemed to get more and more brutal with the children, and we had a grand finale when he caned one of my girls and then knocked her down in the hall. It was just as bad as it sounds. The child's mother came up and I later disgraced myself by saying at a staff meeting that I thought the mother did the right thing in coming up to the school . . . Since then there have been great changes and the head master no longer reprimands teachers before the children; but for the rest, my association with him is one long hymn of hate—he would like to really hurt, I think, but does not know how."

But the divergence of outlook may also manifest itself in a different feeling-attitude :

"It is awful to go to school on the first day. All our staff except myself and one other simply hate teaching, and just count the hours to 4-30 p.m. I cannot make out why they began at all if they feel like that, but they say to me—"Wait, my child, until you have been teaching for a bit longer, you haven't licked the sugar from the pill yet." Cheering, isn't it? "

"It is so difficult to keep one's perspective. All round one is the tendency to regard teaching as a fight between teacher and child—the process of education as something the child hates, work as detestable, and idle playing as something the child delights in. Every day the children receive the suggestion that school is an unpleasant place—that teachers are policemen out to catch offenders. I sent a child out of the room on Friday (he was impossible, and a disturbance to the class). The head found him, pushed him into the room, gave him six strokes, remarked that it was daft to send him to a heavenly idleness. He ought to be grizzling with work in the classroom. 'No, miss, children don't like work. You'll have to learn to bark at them before they'll do anything well! "

Or it may show itself in a different formulation of educational values, and of the results to be aimed at :

"Heads. How many of them are really interested in the children as individuals? They are interested in the attainment of their 'school' in the abstract, it seems to me. The system of elementary education is so competitive that heads strive and urge their staff on, so that the percentage of marks in examinations shall be a high one. They will tell you they want you to exercise all your originality, not to lose your individuality. But by the time you have driven a class of fifty children, of widely varying talents, somewhere near their standard of efficiency in the three R's, what time remains for anything else? "

"Examination results are everything. I found that the three R's still occupied most of my time, because

- (1) Reading, Arithmetic, Spelling, Composition (and very occasionally Recitation) were the only subjects the head teacher had time to examine. The other subjects were left to chance questionings by the inspectors who, from time to time, 'dropped in.'
- (2) The standard to be kept up in these subjects was particularly high.

Hence, when my class had to have its special examination for transfer to the Senior Department, my time-table (from Easter to Midsummer) was something like the following :

| | |
|-------------|---|
| 9- 0 a.m. | (during register calling) learning and written test of ten spellings. |
| 9- 0—11-0. | Arithmetic. |
| 11- 0—12-0. | Composition. |
| 2- 0— 3-0. | Arithmetic. |
| 3- 0— 4-0. | Class Reading." |

" Then there are examinations at schools—highly ridiculous they are, too. Written papers in all subjects—each child has cyclostyled copy of paper set. Each child has special examination seat. There's as much ritual about it all as for a scholarship examination. My present class is seven to eight years, and some can't read. But they all have written papers. The one relieving feature of the whole business is that the kiddies love it. They think it fine fun, and flock to school for it. But it is no test, and it necessitates one spending hours and hours training young children to answer questions in sentences—when they should only be learning to read fluently.

" However, no good worrying, and the idea of a staff meeting to discuss the value of this examination is quite unheard of. My authority complex is irritated to expression when head teachers thrust their schemes on the staff without any staff meeting or discussion."

The realization of this apparent divergence results, almost inevitably, in disillusionment.

" I had a glorious extra year in Form VI, during which I read considerably and really evolved some standard of values for myself, and developed certain tastes. I remember enthusing over it. But from a professional point of view, a year's practical teaching would have been more valuable to me. And that seems to me to be typical of the hopeless demand put upon us in this work. The 'successful, efficient' teacher is the narrow type—she who is content to spend her evenings cyclostyling, preparing spoon-feed for her class, making individual progress cards, in fact, devoting her entire energy and leisure time to the production of effective looking *results*. The teacher who attempts to lead any sort of cultured life, who tries to keep apace to some extent with modern thought, who attempts to mix with outside people and get a different and more proportioned point of view (and how necessary is this contact with other people, after a day spent with children, whose minds are *less* developed than our own), who would like to give her children something of which no record can be kept to show an inspector—she cannot compete with the other type for 'results.' "

" College attempts to teach us to educate. Elementary schools are not yet asking for educators. Elementary education does not consist of 'culture,

the training of habits, the development of tastes, the demonstrating of the 'liveableness' of life, which would stay with the child in after-life. It consists still in hammering in facts (not always valuable ones either), obtaining concrete results, forcing children of different mentalities and types to conform with one type and attain a certain standard of efficiency. Tidiness, not broadness, is demanded. I know a child must be trained to be systematic, to exercise control—but we sacrifice individual development to neat sets of books."

"Queer how one's experiences mark one so. The vision of school has gone and I feel cynical (and perhaps envious) when I hear college students talking enthusiastically about education. The feeling that life is a cheat often grips me, and I feel more bitter than I thought I could be. We all seem to be out to exploit other folks for our own ends. And we use any method for that purpose."

It will appear, I think, from what has been said, that though the young teacher's relations with his pupils may constitute his most urgent practical problem, yet relations with older colleagues may prove the biggest formative influence as regards his attitude to life and his philosophy of living.

7.—Another type of disillusionment may arise out of the overwhelming and possibly hitherto unrealized social conditions among which the school may be set. These conditions may be largely physical and material; and in such cases they are not necessarily discouraging:

"Such conditions are a challenge. They have their own compensation. There are daily miracles, for bricks are made without straw. Every advance made the teacher can claim for himself; he can see his own work growing, for under such conditions there is rarely any ameliorative influence other than his own."

But where the obstacles to be overcome are largely mental and moral, the spiritual burden is heavier.

"During the two years at college one gets accustomed to thinking along certain lines—one is in contact with active, if immature, minds, and even the duller of lectures may provide food for thought. You get a vision of life as a big thing, and along with that broad and deep vision is one of the child—you think of yourself helping that child to enter into your vision of the wider life. You don't realize you may have to teach children from indescribable homes on an island like — formerly and still the abode and refuge of pirates, smugglers, and down and outs."

Hostility on the part of parents, which often accompanies such conditions, seems to be one of the hardest things for a young teacher to endure:

"Quite early in my career there came under my care one, Beatrice, a little girl eleven years of age, rough, insolent, not only to teachers, but also

to her companions, very untruthful and deceitful. She was to be with me three years, through Standards V, VI, and VII, and yet on the first day I felt myself taking a violent dislike to her . . . When I made enquiries among other members of the staff, I found that none of them had a good word for her—she had been the black sheep of every successive class. . . . From the Attendance Officer I learned that her parents were violent and often treated the child very harshly. It was no wonder that such a girl who had no love in her own home and who was held up to unmitigated blame in school should take refuge behind a screen of uncaring defiance and scorn . . . I set myself to restore in Beatrice some of her lost self-respect, for I felt such a child was in desperate need of courage. Where there was the slightest loophole for praise I made the most of it, both to her and to the other children. There were some almost immediate reforms, as in her handwriting and actual school work, but changes in behaviour were very slow, and I did not feel experienced enough to know how best to criticize. Still, I had lost my previous dislike in a competitive feeling to win over the child, and she, I know, was happier; it showed in her face, and she had one or two friends.

"The climax came one hot, stuffy afternoon, when Beatrice passed all bounds, talking, playing and trying to gain attention to herself. Seeing her put her fingers to her nose, I lost my temper, and called her a 'common girl,' and made her sit by herself in the classroom. After 4-o a furious woman strode into the school, shouting for me. She was waylaid by the head, and to him she complained, that I had tried to turn the other children against her child by calling her 'common' . . . The infuriated parent was eventually sent away by the head, and the child was removed to another school. If it had not been for the value I knew I had derived from trying to deal with such a case, I should have been even more humiliated and downcast than I was."

It is possible that in the above case there were faults on both sides. The writer of the following, however, is, in my view, personally quite incapable of giving any parent a just grievance.

"I am teaching in a poor neighbourhood, where many men are out of work. Many of my children are ill-nourished and ill-clad. They are constantly having terrible styes on their eyes, running ears and painful skin diseases. Many of the parents are antagonistic to school and teachers; some are drunk when they come for an interview, and come with a fixed idea that one has a spite against their children. A fortnight ago a mother came to see me because I had kept a child in to finish some work. She said, 'I don't know what you can have against my Nellie. First you make her sit by herself and then you keep her in, as though that wasn't punishment enough. It's got to stop, miss.' The girl in question was a team leader last term. At the end of last term, I had taken her to the pictures, along with fifteen other girls, who had been monitresses, librarians, and chart-keeper, etc., and with whom I was as friendly as they would let me be, and it struck me as rather curious that, out of the sixteen, only one girl said that she had enjoyed it, and thanked me with shining eyes."

The following is one of the few cases known to me in which technical breakdown on the teacher's part actually followed the experience described :

" When I came to this school I found the class I was to take in a terrible state of disorder. A strike was on, and of course a good many families were involved, and the children were up in arms against any authority. The first few weeks I had here seem a dream now—I had the most cutting things said to me by the children, and the only thing for me to do was to stop their play and keep them in after school. I could find no way of appealing to them, so I had to use the only available weapon. At times I had to stand between them and the door to keep them in in order to get done what I wanted done, but at last, fortunately, my will and strength lasted longer than theirs, and they have given in. The parents here do not see why they should not have a school *master*, therefore they are ready to arm against the women teachers whenever possible, and any unruliness or fault on the part of the children is blamed on them."

8.—The next problem—that of insufficient leisure during the first two or three years of teaching life—is possibly simpler of solution. Time and experience, as a rule, serve to show a way out. Only in combination with other difficulties does this one become serious in the sense of threatening breakdown. Nevertheless the lack of opportunity over a term of years for the pursuit of hobbies and the cultivation of individual interests may inflict permanent damage on the growing personality.

" Coming out of college, I had intended to join certain societies, clubs, etc., read certain books, carry out certain plans and hobbies, and, in short, do just what I wanted with my leisure time. But although I have been out twelve months, my leisure time has been taken up with school work. For the first four months I worked every night and all day Saturday and Sunday, beginning my work about 6-30 p.m. (I do not arrive home until 5-15 or 5-30) and finishing about 9-30 or 10-0 p.m. For the last six months I have spent at least three nights per week on school work. The work that thus takes up so much of my leisure time is mainly the making of individual apparatus and the drawing of pictures (story, nursery rhymes and nature). For example, for number, I have cut and stamped 900 cards, sorted these into various grades, and put them into separate labelled boxes; I have made dozens of boxes of graded sense training apparatus.

" Having thus made almost sufficient apparatus for the work in this class, I thought that next year I would be allowed to have the same type of class, so that with a little repair and additions, this apparatus would almost suffice for next year and thus give me a little more leisure time. But this is not to be, for next August I am to take a class of six-year-olds, and thus I have to begin all over again, thinking out, making and grading the work. This class still needs a certain amount of individual apparatus (e.g., writing copies and sense training), all of which I will have to make in my leisure time."

"A more practical point—there is so much to be done getting to know the ropes in the first year or two, that sheer physical and nervous exhaustion is one of the greatest difficulties. Like the girl in Sinclair Lewis' 'Main Street,' we try grand scale modifications and want quick results, and go all out to get them, and have to learn by our own folly. We do not know how to conserve energy—we work feverishly day and night and have no real rest."

"And, please, do implore the students you meet to take up several other occupations besides school work. The more elementary school teachers I meet the more ashamed I feel of their ignorance and lack of general topics of conversation: it is so frightfully easy to settle down in a rut and do the same work year in, year out. I am sure many teachers don't read a decent book once they have left college!"

9.—Our last point concerns the tension set up by the fact that college, and the ideals of the profession generally, emphasize the importance of certain aspects of the good life—books; the arts; travel, etc.—which the lower reaches of the Burnham Scales fail to recognize, or at any rate to provide for.

"There is the recognition of our social limitation, brought about by our inadequate salary. Youth would be more lavishly experimental, and resents the dove-tailing economies which are enforced upon it!"

"The financial side of life is rather like the National Debt at the moment—at the end of the month even tram fares are out of question."

"Add to that intense loneliness, and a lack of cash; add again an unsatiated desire for excitement and adventure—to balance the routine of teaching and the rather prosaic life—and also an outcome of the nervous tension and sense of failure."

As has already been admitted, tension of this type may itself be a condition of growth, and is in any case indubitably one of the ills to which all flesh is heir. Nevertheless, the contrast between the salaries earned by older and younger teachers may be harmful in so far as it increases that divergence of outlook already discussed.

"The teacher, receiving maximum salary and working by what light he has left from the training of the last generation of training colleges, receives twice the salary of the newly equipped young teacher. The latter has usually to live in rooms away from home, has often to repay loans, frequently has to help support his relatives, and, if he be bold enough to marry, may have all the initial expenses of home building. I found during my first year out that I had two shillings a week left after answering the first three of the above calls. Only now am I beginning to do the things I wanted to do, and which seem, not luxuries, but necessities, to a person whose business is to inculcate knowledge and to develop culture and character. I can at last buy a few books each year, recommence college studies, take an interest in the arts, and, by careful saving, travel a little. But one can only do these things by avoiding marriage!"

Here our survey of the problem, as illuminated by correspondence, ends. There is one further type of difficulty hinted at in our last selection of extracts—"intense loneliness—the rather prosaic life—the recognition of our social limitation"—which I believe also to be seriously operative, but which is insufficiently documented to be included here.

The main conclusion which seems to me to emerge from the survey is that though one or more types of conflict may be bearable and even fruitful, the concentration of many acute tensions in a single personality constitutes a danger. How to reduce these tensions is another question, but its importance is clearly the moral of the whole matter.

III.—SUMMARY OF CONCLUSIONS.

1.—Breakdowns among young teachers probably do not arise from any single cause, but from the concentration of a number of adjustment problems in a single personality.

2.—The following sources of difficulty are revealed by correspondence :

- (1) Personal difficulties intensified by the nature of professional life :
 - (a) difficulties characteristic of the early twenties ;
 - (b) more lasting temperamental difficulties.
- (2) The placing of students, at the beginning of their careers :
 - (a) in departments for which they have not trained ; or
 - (b) where there is insufficient scope for specialization or for the development of individual interests.
- (3) Difficult conditions of work : inadequate buildings and equipment ; two or more classes in one room, etc.
- (4) Problems of
 - (a) class management ; and
 - (b) the treatment of difficult individuals.
- (5) The attitude of head teachers, and of older members of staff, to young teachers.
- (6) The apparent difference in outlook between one generation and another, especially as regards
 - (a) disciplinary methods ;
 - (b) educational aims and values.
- (7) Difficulties arising out of the social background of the school —poverty, the opposition of parents, etc.
- (8) Insufficient leisure during the early years of teaching life.
- (9) Financial difficulties during the early years of teaching life.

3.—Of the above, Nos. (4), (5), and (6) are possibly the more serious.

4.—There is a strong case for considering ways and means of reducing in number or intensity the tensions characteristic of the first few years of professional life.

RÉSUMÉ.

QUELQUES PROBLÈMES D'AJUSTEMENT DANS LES PREMIÈRES ANNÉES DE LA CARRIÈRE DE L'ENSEIGNEMENT.

Les crises de santé qui seront nombreuses, parmi les jeunes professeurs sont examinées à la lumière de lettres de professeurs qui sont entrés dans la carrière pendant les dix dernières années. Les sources principales de conflit qui en ressortent sont : les difficultés personnelles qui caractérisent l'âge de vingt à vingt-cinq ans ; les difficultés de tempérament qui persistent plus longtemps ; le placement erroné des étudiants au début de la carrière ; les conditions difficiles de travail ; les classes nombreuses ; les difficultés avec des individus parmi les élèves ; l'attitude des collègues plus âgés envers les jeunes ; les différences de points de vue pédagogiques entre les générations ; les conditions sociales dans le quartier où est située l'école ; trop peu de loisir pendant les premières années, et un traitement insuffisant. On suggère que les crises de santé sont produites non pas par une seule cause mais par quelque combinaison des causes citées, parmi lesquelles les difficultés avec les élèves et avec les collègues plus âgés et les différences de points de vue pédagogiques sont probablement les plus importantes.

ÜBERSICHT.

EINIGE PROBLEME DER ANPASSUNG IN DEN ERSTEN DIENSTJAHREN EINES JUNGEN LEHRERS.

Die angeführten häufigen Zusammenbrüche bei jungen Lehrern werden mittels Briefe betrachtet, die von in den letzten zehn Jahren ausgebildeten Lehrern geschrieben worden sind. Die Hauptursachen der enthüllten Konflikte sind : persönliche Schwierigkeiten, die für das Alter von Anfang zwanzig typisch sind ; in der persönlichen Veranlagung begründete dauernde Schwierigkeiten ; ungeeignete Anfangsstellungen ; hemmende Arbeitsbedingungen ; grosse Klassen ; Schwierigkeiten mit besonderen Schülern ; das Benehmen älterer Kollegen jüngeren gegenüber ; Abweichungen in der Anschauung über Erziehung zwischen den Generationen ; soziale Zustände im Schulgebiet ; ungenügende Freizeit während der ersten Dienstjahre und ein unzulängliches Gehalt. Es wird angedeutet, dass Zusammenbrüche nicht von einer einzigen Ursache herrühren mögen, sondern von einem Zusammenwirken der obigen Gründe, unter welchen Schwierigkeiten mit Schülern und älteren Kollegen und abweichende Ansichten über Erziehung wahrscheinlich am wichtigsten sind.

A STUDY OF THE EFFICIENCY OF "INDIVIDUAL WORK."

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PART II.

IVB.—*The use of the New Stanford Achievement Tests in 1930 and 1931.*

V.—*The testing of Experimental Class B and Control Class Y.*

VA.—*Results for 1928 and 1929.*

VB.—*The use of the New Stanford Achievement Tests in 1930 and 1931.*

VI.—*Discussion of Accomplishment Ratios.*

VII.—*Conclusions.*

IVB.—USE OF THE NEW STANFORD ACHIEVEMENT TESTS IN 1930-31.

In 1930 and 1931 an American Group Test¹² (the New Stanford Achievement Test), was used with all classes. This test has a primary form, used in 1930, and an advanced form, used in 1931, and it may be had in various editions, so that the same actual tests are never done twice. Again the scores quoted below may all be transformed directly into "educational ages," and they mean the same thing in all tests. For example, a score of 58 whether the subject be reading of paragraphs, or arithmetical computation, or language usage, always means that score which will be got by the absolutely normal pupil of ten years six months. It is thus possible to translate all scores directly into "Educational Ages." The subjects covered are:

Reading Paragraphs, Word Meaning, Dictation, Language Usage (in advanced form only), Arithmetical Reasoning, Arithmetical Computation.

The Advanced Form also contains other tests less suitable for use in Britain.

The pupil's scores in all tests are then averaged to give an "Educational Age."

Educational ages got from an American Test may be somewhat misleading in Scotland, for there are differences in the stress laid on different subjects in the two countries. For instance, Scottish children are almost invariably very good spellers when compared with American standards. On the other hand, tests frequently indicate that the American child is superior in silent reading. The difficulties become most pronounced in arithmetic. "The Reasoning" or "Problems" test had to be "translated," all sums involving dollars and cents being changed into sums of the same difficulty using English money. The Computation Test had few money sums, but it introduced another difficulty. In the English or Scottish school

there is a considerable period round about the age of ten spent in instruction and practice in "money sums." The American schools with their decimal money system escape a host of difficulties. They introduce decimals early, and pass rapidly to fractions, and the test illustrated this practice. Our pupils had to pass at once from easy sums in simple multiplication and division to sums involving decimals and easy fractions. The Scottish practice appears to be to give the "money sums" at this point, and many of the pupils had barely touched fractions. One class had covered a great deal of ground, but the others appear as though they had been doing very little during the year, which is contrary to the facts. They have been doing a type of arithmetic not represented in the test.

Nevertheless the many good qualities of the Stanford Test made it a more suitable measuring instrument to apply to all classes than any English test would have been. Even if the "Educational Ages" are sometimes a little misleading, the comparison of classes remains valid enough.

The following tables show the results of tests done in July, 1930, and July, 1931, on Experimental Class A and on Control Class X.

TABLE III.
CLASS AVERAGES IN THE NEW STANFORD ACHIEVEMENT TEST.
(Tests done in July, 1930.)

| | <i>Experimental Class A.</i> | | <i>Control Class X.</i> | |
|-------------------------------|---|----------------------------|---|----------------------------|
| | <i>Average age in July, 1930 : 10y. 4m.</i> | | <i>Average age in July, 1930 : 10y. 1m.</i> | |
| | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> |
| Reading Paragraphs | 67 (10.35) | 11y. 3m. | 56.4 (9.6) | 10y. 5m. |
| Word Meaning | 63 (8.1) | 10y. 11m. | 58.4 (8.5) | 10y. 6m. |
| Dictation | 70.7 (6.16) | 11y. 6m. | 68.3 (5.7) | 11y. 4m. |
| Arithmetical Reasoning | 71.4 (10.1) | 11y. 6m. | 62.3 (10.0) | 10y. 10m. |
| Arithmetical Computation | 63.3 (3.14) | 10y. 11m. | 56.4 (4.74) | 10y. 5m. |
| *Average of All Tests | 66.95 (6.18) | 11y. 3m. | 60.6 (6.34) | 10y. 9m. |

*Obtained by first combining and averaging each child's scores in all tests and then taking a class average.
The numbers in parenthesis are the standard deviations of the distributions.

TABLE IV.
(See also Figure I at end.)
CLASS AVERAGES IN THE NEW STANDFORD ACHIEVEMENT TEST.
(Tests done in July, 1931.)

| | <i>Experimental Class A.</i> | | <i>Control Class X.</i> | |
|------------------------------|----------------------------------|----------------------------|-----------------------------|----------------------------|
| | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> |
| Reading Paragraphs | 79 (15.1) | 12y. 4m. | 69.5 (14.6) | 11y. 6m. |
| Word Meaning | 88.75 (12.5) | 13y. 9m. | 80.72 (11.27) | 12y. 6m. |
| Dictation | 87.75 (11.1) | 13y. 7m. | 83.63 (8.19) | 12y. 11m. |
| Language Usage | 83 (15.7) | 12y. 10m. | 70.14 (18.0) | 11y. 6m. |
| Arithmetic Reasoning | 82.5 (8.9) | 12y. 10m. | 75.72 (10.8) | 12y. 0m. |
| Arithmetic Computation | 87.5 (12.45) | 13y. 7m. | 64.19 (6.9) | 11y. 0m. |
| *Average of All Tests | 83.25 (11.25) | 12y. 10m. | 73.63 (10.55) | 11y. 10m. |

*Obtained by first combining and averaging each child's scores in all tests and then taking a class average.

The numbers in parenthesis are the standard deviations of the distributions.

It will be noted that both classes are getting results in excess of the American norms for their respective ages, but that Class A is getting extraordinarily high scores. Perhaps a clearer way of seeing the same facts is to look at the change in the class averages during the year between July, 1930, and July, 1931.

TABLE V.
PROGRESS IN TWELVE MONTHS EXPRESSED IN TERMS OF MONTHS.

| | <i>Experimental Class A.</i> | <i>Control Class X.</i> |
|--------------------------------|----------------------------------|-----------------------------|
| Reading Paragraphs | 13m. | 13m. |
| Word Meaning | 34m. | 24m. |
| Dictation | 25m. | 19m. |
| Arithmetical Reasoning | 16m. | 14m. |
| Arithmetical Computation | 32m. | 7m. |
| Average of All Tests | 19m. | 13m. |

Certain subjects may be picked out for special comment. In word meaning and dictation both classes appear to have made a surprising advance, but this is partly due to the fact that the 1930 test underestimated their capacities in these subjects. The primary form was used and the scores were such as to suggest that both classes understood and could have spelled harder words than any that appeared in the test. The advanced test is an extension of the primary one, and it took them to the limit of their powers. The difference between the classes in computation is most striking, and it is due to the cause already mentioned. Class *A* has covered far more ground in Arithmetic than is expected by the present Edinburgh syllabus for Senior II. It has in fact used all the processes required at the Qualifying Stage. Consequently the pupils were able to tackle a great variety of types of sum. The Control Class, on the other hand, judging by its score, is not behind its age, but its small progress during the year is almost certainly due to the fact that it has been doing sums of another type.

Measuring in month units Class *A* has made 19 months' progress in 12 months, while Control Class *X* has made 13 months' progress. It is also true that measured by the Binet Tests the Experimental Class which has an average I.Q. 106 would not be expected to do more than 13 months work in a year.

It seems desirable to study these results more closely. As the Binet Testing in *X* and *Y* was incomplete, and as even in *A* and *B* the tests had spread over a long period it was felt that a reliable Group Intelligence Test should be done at the same time in all classes. The National Intelligence Test, Scale A, Form 2, was therefore applied in all classes in February, 1931. Where possible both the Binet and the National I.Q. were taken into account in estimating a pupil's ability, the Binet I.Q. being counted the more reliable. Where children had taken both tests (72 cases) the correlation between Binet and National I.Q.'s was $.73 \pm .037$. If the Binet I.Q.'s be taken as the standard estimates, then the National I.Q.'s, where children had done both tests, were almost consistently too high, so that these were reduced slightly, and each child was given a "Weighted Average I.Q." which was used later in computing accomplishment ratios. The average I.Q. of Class *A* thus obtained was 108, while that of *X* was 100.

A rough calculation of A.R.'s in 1931, done as before from class averages, gives the following table :

TABLE VI.
ACCOMPLISHMENT RATIOS.
(July, 1931.)

| | <i>Experimental Class A.</i> | <i>Control Class X.</i> |
|------------------------------|----------------------------------|-----------------------------|
| Average Age | 11y. 4m. | 11y. 1m. |
| Average I.Q. | 108 | 100 |
| Reading Paragraphs | 101 | 104 |
| Word Meaning | 112 | 113 |
| Dictation | 111 | 117 |
| Language Usage | 105 | 104 |
| Arithmetic Reasoning | 105 | 109 |
| Arithmetic Computation | 111 | 99 |
| Composite Score | 105 | 107 |

It will be seen that judging by such a very severe standard as the accomplishment ratio, both classes are doing very good work, the most noticeable differences being in arithmetical computation, where *A* has the advantage, and in spelling where *X* has the advantage when age and intelligence are taken into account.

The booklet of instructions for the New Stanford Achievement Test recommends that in general educational surveys conclusions should be based not on the separate subject ages, but on the composite scores which are more reliable. Hence the accomplishment ratios of individual children were calculated from composite scores only. The averages of the individual A.R.'s are shown below.

TABLE VII.
ACCOMPLISHMENT RATIOS.

| | <i>July, 1930.</i> | | <i>July, 1931.</i> | |
|-----------------------------------|--------------------|---------------|--------------------|---------------|
| | <i>Mean.</i> | <i>Sigma.</i> | <i>Mean.</i> | <i>Sigma.</i> |
| Experimental Class <i>A</i> | 101.83 | 8.87 | 108.125 | 6.8 |
| Control Class <i>X</i> | 107.2 | 7.9 | 108.23 | 6.1 |

In 1930 the P.E. of the difference between *X* and *A* was 1.32, so the difference was significant. In 1931 the accomplishment ratios obtained by the more accurate method are equal. The fuller discussion of the significance of the accomplishment ratios will be postponed until the results of Classes *B*, *X*, and *Y* have been given.

V.—THE TESTING OF EXPERIMENTAL CLASS *B* AND CONTROL CLASS *Y*.

Experimental Class *B* and Control Class *Y* left the infant room in May, 1928, and had their first tests in October. Class *B* had 40 pupils, 16 boys and 24 girls. The average age was 8 years 1 month. Class *Y* had 46 pupils, 20 boys and 26 girls, and the average age was 7 years 10 months. It will be noted that again the Experimental Class is three months older, although nominally the classes are at the same stage in school. By this time the testing done in the two older classes had shown that the Experimental School apparently drew its pupils from a more intelligent part of the community than did the school which contained Control Class *X*, accordingly Class *Y*, the control class parallel to Experimental Class *B*, was obtained from a different school, which drew children from a good neighbourhood. One disadvantage of this proved to be that some of the brightest children when they were old enough to travel alone were transferred to fee-paying schools at a greater distance from their homes, and were thus lost to the experiment. In October, 1928, both groups of pupils were tested, the tests used being :

- (1) The Otis Primary Intelligence Test, Form A.¹³
- (2) Haggerty's Reading Examination.
- (3) Burt's Spelling Tests. (Ages 6-9 inclusive.)
- (4) Burt's Arithmetic Fundamentals Tests : Addition, Subtraction and Multiplication.

The Otis Primary Intelligence Test proved much easier to administer than Haggerty's "Sigma I" and the scores made gave mental ages corresponding much more closely than before with Binet Ages. Consequently the results of this intelligence test have been retained in calculating a composite I.Q. in 1931.

The same scholastic tests were used in July, 1929, and in 1930 and 1931 the classes were given the new Stanford Achievement Tests (Primary and Advanced). These two classes also did the National Intelligence Test, Scale A, Form 2, in February, 1931.

TABLE VIII.
EXPERIMENTAL CLASS B AND CONTROL CLASS Y.

| | October, 1928. | | July, 1929. | |
|----------------------------------|-----------------------|--------------------|-----------------------|--------------------|
| | Experimental Class B. | Control Class Y. | Experimental Class B. | Control Class Y. |
| Average { Chronological Age | 8y. 1m. | 7y. 10m. | 8y. 10m. | 8y. 7m. |
| Binet I.Q. | — | — | 107 | — |
| Score Otis Primary | 40 (13.1) | 32 (7.6) | — | — |
| Reading { Haggerty Delta I. | 27.6 (6.5) | 17.4 (6.5) | 30.4 (6.4) | 27.5 (6.5) |
| Age..... | 9y. 2m. | 7y. 9m. | 9y. 9m. | 9y. 2m. |
| Burt's Spelling Age | 9y. 8m. (7.8m.) | 8y. 6m. (7.9m.) | 10y. 0m. (11m.) | 9y. 3m. (8.5m.) |
| Burt's { Addition Test | 16.3 (6.3) | 7.8 (5.4) | 18.2 (7.6) | 13.7 (5.7) |
| Addition Age | 8y. 9m. | 6y. 6m. | 9y. 2m. | 8y. 0m. |
| Burt's { Subtraction Test .. | 18.4 (11.0) | 16.5 (7.3) | 25.5 (16.2) | 22.3 (10.5) |
| Subtraction Age .. | 7y. 0m. | 6y. 10m. | 7y. 9m. | 7y. 4m. |
| Burt's { Multiplication Test. | 16.6 (6.1) | 11.5 (5.5) | 23.2 (12.9) | 22.9 (12.0) |
| Multiplication Age .. | 7y. 2m. | 6y. 8m. | 7y. 10m. | 7y. 9m. |
| Burt's { Division Test | — | — | 13.0 (12.5) | 13.7 (10.0) |
| Division Age | — | — | 7y. 9m. | 7y. 9m. |
| Arithmetic Age | 7y. 8m. | 6y. 8m. | 8y. 2m. | 7y. 9m. |
| (All Arithmetic Tests combined.) | | | | |
| Educational Age..... | 8y. 10m. | 7y. 8m. | 9y. 4m. | 8y. 9m. |
| (All Subjects.) | | | | |

The numbers in parenthesis are the standard deviations of the distributions.

VA.—RESULTS FOR 1928-29.

Table VIII shows the results of tests done in 1928 and 1929.

Like its companion, Experimental Class B is ahead of its Control Class all through, and again the degree of superiority is rendered doubtful because of a slight difference in average age, and because Control Class Y did not undergo a full series of Binet Tests. A special effort was made to complete the testing in both Experimental classes. Class B had an average Binet I.Q. of 107. In class Y children described by the teacher as "Very Good," "Average," and "Poor" were tested individually, but

for most children only scores in the Otis and National Tests were available. All tests, however, indicated that the average I.Q. of Y was probably not above 100. It contained no exceptionally bright children, those described as "average" had Binet I.Q.'s rather below than above 100, and both Group Tests gave average I.Q.'s of about 100. By an elaborate method of weighting each child's scores were combined to give an I.Q. which should represent his ability as fairly as possible. This resulted in a Mean I.Q. of 110 ± 13.1 for the Experimental Class and 99.7 ± 12.9 for the Control Class.

If we attempt to make a table comparable to Table II for the years 1927 and 1928 we get the following :

TABLE IX.

| | <i>October, 1928.</i> | <i>July, 1929.</i> |
|------------------------------|-----------------------|----------------------|
| Experimental Class B { | E.Q. 109 A.R. 102 | E.Q. 106 A.R. 99 |
| Control Class Y { | E.Q. 98 A.R. 98 | E.Q. 102 A.R. 102 |

The Accomplishment Ratios are doubtful. 107 was the average I.Q. of Class B as it was composed in 1927-1928, but as has been said Y's average I.Q. is uncertain. Looking at the E.Q.'s alone we see that apparently the Control Class is improving rather more rapidly than the Experimental Class. Also Experimental Class B, while it is doing very good work, is not equalling the very high scores made by Experimental Class A during the first and second years of the testing. B's "Arithmetical Age" (as shown by computation) is somewhat behind its chronological age, while arithmetic is A's strongest subject. In reading and spelling B's scores in 1928 exceed A's scores in the corresponding year 1927. This was not unexpected. A frequent visitor to both classes realized that efficiency in the mechanics of arithmetic was much more stressed in A than in B, and the teachers themselves were aware of the difference. It was interesting to observe the quality of B's spelling at this time, for the type of spelling drill common to most Edinburgh schools was unknown here and the Winnetka-like method of spelling practice had not begun. Reading and spelling were good mainly because the children did so much independent work with job cards and books like "Primary Silent Reading,"¹⁴ and "Reading and Thinking."¹⁵

VB.—THE USE OF THE NEW STANFORD ACHIEVEMENT TESTS IN
1930-31.

In July, 1930, the New Stanford Primary Achievement Tests were given, and in November, 1930, a second Control Class, which will be called Z, was tested. Class Z was in a school whose pupils generally do exceedingly well both in Intelligence and Achievement tests. It was felt that if B compared favourably with it, the most ardent supporter of "Efficiency at all costs" could not shake his head over the Project Method. Z was tested in November, 1930, and again in February and July, 1931. Tables X, XI, and XII show the results of the Stanford Achievement Tests.

TABLE X.

CLASS AVERAGES IN NEW STANFORD ACHIEVEMENT TESTS (PRIMARY).
(Tests done in July, 1930.)

| | <i>Experimental Class B.</i> | | <i>Control Class Y.</i> | | <i>Control Class Z. (First Tested November, 1930.)</i> | |
|---------------------------|--|----------------------------|---|----------------------------|--|----------------------------|
| | <i>Average Age, July, 1930. 9y. 10m.</i> | | <i>Average Age, July, 1930. 9y. 7m.</i> | | <i>Average Age, November, 1930. 10y.</i> | |
| | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> |
| Reading Paragraphs | 59.42 (11.15) | 10y. 7m. | 46 (10.6) | 9y. 8m. | 50.2 (8.58) | 9y. 11m. |
| Word Meaning | 57.8 (9.77) | 10y. 6m. | 44 (11.65) | 9y. 6m. | 46.6 (13.0) | 9y. 9m. |
| Dictation | 66.1 (5.85) | 11y. 2m. | 58.65 (9.75) | 10y. 7m. | 67 (5.32) | 11y. 3m. |
| Arithmetic Reasoning | 68.4 (10.7) | 11y. 4m. | 57.5 (13.0) | 10y. 6m. | 53.3 (11.05) | 10y. 2m. |
| Arithmetic Computation.. | 53.25 (6.0) | 10y. 2m. | 49.5 (8.4) | 9y. 11m. | 52.9 (7.62) | 10y. 2m. |
| Average of All Tests..... | 60.96 (6.54) | 10y. 9m. | 51.37 (8.61) | 10y. 0m. | 54.2 (7.13) | 10y. 3m. |

The numbers in parenthesis are the standard deviations of the distributions.

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TABLE XI.
CLASS AVERAGES IN THE NEW STANFORD ACHIEVEMENT TEST.
(Test done in July, 1931.)

| | <i>Experimental Class B.</i> | | <i>Control Class Y.</i> | | <i>Control Class Z.</i> | |
|---------------------------|---|------------------------|--|------------------------|--|------------------------|
| | <i>Average Age, July, 1931. 10y. 10m.</i> | | <i>Average Age, July, 1931. 10y. 7m.</i> | | <i>Average Age, July, 1931. 10y. 8m.</i> | |
| | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> | <i>Score.</i> | <i>Age Equivalent.</i> |
| Reading Paragraphs | 69 (16.15) | 11y. 5m. | 60.04 (12.2) | 10y. 8m. | 66.12 (13.6) | 11y. 2m. |
| Word Meaning | 77.71 (7.2) | 12y. 3m. | 67.87 (13.1) | 11y. 4m. | 73.25 (13.2) | 11y. 9m. |
| Dictation | 79.57 (8.5) | 12y. 6m. | 73 (10.8) | 11y. 9m. | 80.5 (6.72) | 12y. 7m. |
| Language Usage | 74.86 (15.6) | 11y. 11m. | 64.94 (16.2) | 11y. 1m. | 73.62 (14.4) | 11y. 10m. |
| Arithmetic Reasoning ... | 73.28 (9.0) | 11y. 9m. | 68.96 (16.35) | 11y. 5m. | 70.75 (13.35) | 11y. 7m. |
| Arithmetic Computation.. | 60.86 (5.2) | 10y. 9m. | 53.63 (7.45) | 10y. 3m. | 65.87 (9.25) | 11y. 2m. |
| *Average of All Tests.... | 72.71 (8.55) | 11y. 9m. | 65.04 (10.68) | 11y. 1m. | 71.87 (9.7) | 11y. 8m. |

*Obtained by first combining and averaging each child's scores in all tests, and then taking a class average.

The numbers in parenthesis are standard deviations of the distributions.

TABLE XII.

| | <i>Progress in 12 months, measured in months.</i> | | <i>Progress in 8 months.</i> |
|-----------------------------|---|-------------------------|----------------------------------|
| | <i>Experimental Class B.</i> | <i>Control Class Y.</i> | <i>Control Class Z.</i> |
| Reading Paragraphs | 10m. | 12m. | 15m. |
| Word Meaning..... | 21m. | 22m. | 24m. |
| Dictation | 16m. | 14m. | 16m. |
| Arithmetic Reasoning | 5m. | 11m. | 17m. |
| Arithmetic Computation | 7m. | 4m. | 12m. |
| *Composite Score—Average .. | 12m. | 13m. | 17m. |

*Got by averaging each child's scores in all tests, combining the class results, and averaging them.

In actual scores and "Educational Ages" Experimental Class *B* still holds the first place, but in July, 1931, Control Class *Z* approaches it very closely—slightly surpasses it if we take actual age averages into account. The advance made in arithmetic in the Experimental Class seems not very great. But it should be noted that the July, 1930, average in Reasoning Tests was exceptionally high. To exceed it the children would require to have covered a large number of new arithmetical processes. Both Control Class *X* and Control Class *Y* have made small *apparent* advance in arithmetical computation, for reasons already stated. The same reasons will apply in the Individual Work Class. Perhaps the most surprising result is the progress of Control Class *Z* in eight months. The headmaster of *Z*'s school had recently transferred from the school where Class *Y* is, and he agreed that the two classes (both of which he knew personally) were parallel. They appeared parallel at the time of the November Test, although it was noted then that the *Z* pupils were notable spellers. In July, 1931, however, they appear, according to the tests, to have advanced seventeen months in eight months, while their intelligence, measured only by a Group Test, is much the same as that of Control Class *Y*—well below that of the Experimental Class. It has not been possible to find the reason for this extraordinary progress. The head master and class teacher reported only the use of encouragement for good work and stress on thoroughness, but such practices are common to all good teaching and were used in the other classes. Perhaps the children were taken at a disadvantage by their first test, and did themselves less than justice in November, 1930. All the others were used to group tests and settled to them at once in a business-like way.

To return to the Experimental Class, we may finally compare the accomplishment ratios of the three parallel classes, noting, however, that the I.Q.'s of the Control Classes have been determined by Group Tests only and that the combining of Group Test results with Binet I.Q.'s has led to a suspiciously high average I.Q. for Class *B*—110 in place of the Binet average, which was 107. Is it not possible that rapid and accurate silent reading has raised the National Intelligence Test scores unduly high? Giving *B* its very heavy handicap we have the results shown on Table XIII.

The effect of the accomplishment ratio is to reduce the apparently high educational quotients of a bright class and to raise those of a duller class. Hence Experimental Class *B* with an average I.Q. of 110 is doing almost exactly the quality of work which might reasonably be expected of it, while Class *Y*, which is younger and of average ability, is doing better

work than need be expected and Class Z is now doing exceptionally good work.

TABLE XIII.
ACCOMPLISHMENT RATIOS.
(July, 1931.)

| | <i>Experimental Class B. Age 10y. 10m.</i> | <i>Control Class Y. Age 10y. 7m.</i> | <i>Control Class Z Age 10y. 8m.</i> |
|-----------------------------|--|--|---|
| Average I.Q. | 110 | 100 | 100 |
| Reading Paragraphs | 96 | 101 | 105 |
| Word Meaning | 103 | 107 | 110 |
| Dictation | 104 | 111 | 118 |
| Language Usage | 100 | 105 | 111 |
| Arithmetic Reasoning | 98 | 108 | 109 |
| Arithmetic Computation | 90 | 97 | 105 |
| *Composite Score | 98 | 105 | 109 |

* Obtained by first combining and averaging each pupil's scores in all tests, and then taking a class average.

The averages of individual A.R.'s of all children in Classes B and Y are shown in Table XIV.

TABLE XIV.
ACCOMPLISHMENT RATIOS.

| | <i>July, 1930.</i> | | <i>July, 1931.</i> | |
|----------------------------|--|---------------|---|---------------|
| | <i>Mean.</i> | <i>Sigma.</i> | <i>Mean.</i> | <i>Sigma.</i> |
| Experimental Class B | 102.7 | 8.5 | 100.7 | 6.2 |
| Control Class Y | 106.4 | 8.1 | 106.1 | 8.0 |
| P.E. Difference | 1.33 | — | 1.08 | — |
| | (Hence difference in favour of Y is <i>not</i> significant.) | | (Hence difference in favour of Y is significant.) | |

VI.—ACCOMPLISHMENT RATIOS.

Before discussing these values let us look at a few more figures. The main thesis of Dr. Franzen's monograph on "The Accomplishment Ratio" is that bad classification and mass teaching in America handicap the bright child, preventing him from reaching his maximal achievement in school subjects, while on the other hand the teacher is induced to devote an undue amount of time to the coaching of dull children in the endeavour to "bring them to the level of their class." In the typical class there is a negative correlation between I.Q. and A.R.; bright children with educational age well above chronological age tend nevertheless not to reach the achievement indicated as possible by their mental age. Their accomplishment ratios are, therefore, below 100. On the other hand, dull children having educational age below the chronological age are prevented by the zeal of their teachers from having the quality of achievement which is natural to their low mental age. They frequently have accomplishment ratios above 100. By careful reclassification coaching, and the use of incentives, Dr. Franzen succeeded in Garden City School in "'pushing' abilities to their limit," that is, reducing the handicap of bright children and thus lowering the negative correlation between I.Q. and A.R. It was suggested to the writer that it might be profitable to investigate the degree of correlation between I.Q. and A.R. in Experimental and Control Classes to see whether children who proceeded at their own natural rate showed greater correspondence between Intelligence and Achievement than did the others.

TABLE XV.
CORRELATION BETWEEN A.R. AND I.Q.

| | 1930. | 1931. |
|----------------------------|----------------|----------------|
| Experimental Class A | $-.88 \pm .03$ | $-.37 \pm .09$ |
| Control Class X | $-.85 \pm .03$ | $-.77 \pm .04$ |
| Experimental Class B | $-.68 \pm .06$ | $-.71 \pm .06$ |
| Control Class Y | $-.56 \pm .07$ | $-.42 \pm .08$ |

If any conclusion can be drawn from these figures it must be that in A in 1931 achievement is more in harmony with intelligence than it was in 1930 while X shows a slighter change. On the other hand, it is not B but Y that reduces its negative correlation in 1931. Yet when we compare the sigmas of B and Y in 1931 we find that while in I.Q. B has the wider spread (sigma 13.1) its spread in A.R. is less than that of Y, the sigmas being $B=6.2$, $Y=8.0$; that is in B the accomplishment ratios would seem to vary more consistently with intelligence than in Y.

All this assumes that the accomplishment ratio is a reliable measure but its value has been disputed. In reasoning from it one must at least use great caution.^{16 17 18} The intelligence quotients must be reliable, as must also be the educational ages. Miss Rand shows that if the E.Q. is a smaller unit than the I.Q., the brighter the child the lower will his A.R. be, and *vice versa*, and goes on to give evidence to prove that the E.Q. unit is smaller than the I.Q. unit. Now our Experimental Classes both have high average I.Q.'s, while the I.Q.'s of the Control Classes are normal. On Miss Rand's showing, then, we must expect the Experimental classes to have their achievement underestimated when the average A.R. is taken. In the case of the dull children the quality of the teaching actually makes for a lack of correlation between A.R. and I.Q. James, for instance, has a Binet I.Q. of 76, and in July, 1931, his composite score in the New Stanford Test was 46—the third lowest score in his class. Class place and ability agree. But for James that score is better than one need expect, and his A.R. is 106. A class containing a number of such pupils has the chance of making a high accomplishment ratio average. Take Robert on the other hand. His I.Q. is 152. To gain an A.R. of 100 he would require to do the work of a boy of fifteen at the present time, and his age is ten. In 1931 he had the highest composite score in his class, 92, and his educational quotient was 135. Yet his A.R. is because of his high intelligence reduced to 88. Perhaps such children should be reclassified to give them the opportunity of raising their achievements and passing through the school quickly, but there are many opponents to such a policy. These assert that brilliant children lose more socially than they gain intellectually by being classified with older companions, and would agree that in the absence of a special class for gifted pupils the individual work class, which gives opportunities for varying pace, and many activities outside the "minimum essentials," is the best place for genius at the age of ten. Robert gives a valuable contribution to the communal life of the class. His intellectual interests stimulate the others; he is joint editor of the magazine, takes an active part in sport, and spends some time in coaching less fortunate people in arithmetic in a perfectly natural and friendly manner. He reads widely, choosing the books that please him. Lately he persuaded his teacher to teach him some French, but politely refused the book of French fairy-tales which she offered him. A simple story of the life of Joan of Arc satisfied the young critic. He might learn something new from it, he thought.

Robert is an exceptional boy even in Class B, but in that class there are various children with high E.Q.'s, higher I.Q.'s, and consequently low A.R.'s. These combine to lower the average A.R. Y has few

such pupils. The highest I.Q. is 124, while there are far more pupils with low I.Q.'s than there are in *B*. These tend to have high accomplishment ratios. Similar examples might have been taken from *A* and *X*.

VII.—CONCLUSIONS.

Towards what conclusions, then, does this discussion lead?

Accomplishment ratios are perhaps not the best means of estimating the relative position of these classes. In this instance some of them are based on doubtful data, and in any case their significance is debatable. To say that because *A* and *X* have each an A.R. of 108 in 1931 their achievements are equal is misleading. Such a conclusion would only be valid if the groups were "parallel" in the sense of being composed of "paired" children. The nature of the classes made such pairing impossible. Similarly it is misleading to say that *Y* is better than *B* because the difference between the A.R.'s is significant and is in favour of *Y*.

FIG. I.

EXPERIMENTAL CLASS A AND CONTROL CLASS X, JULY, 1931.

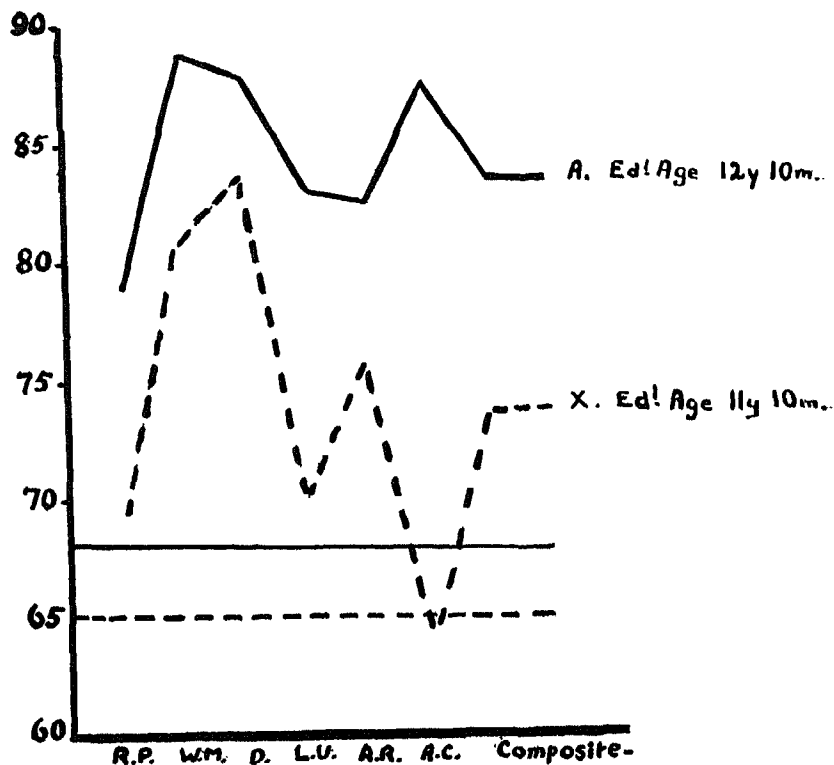
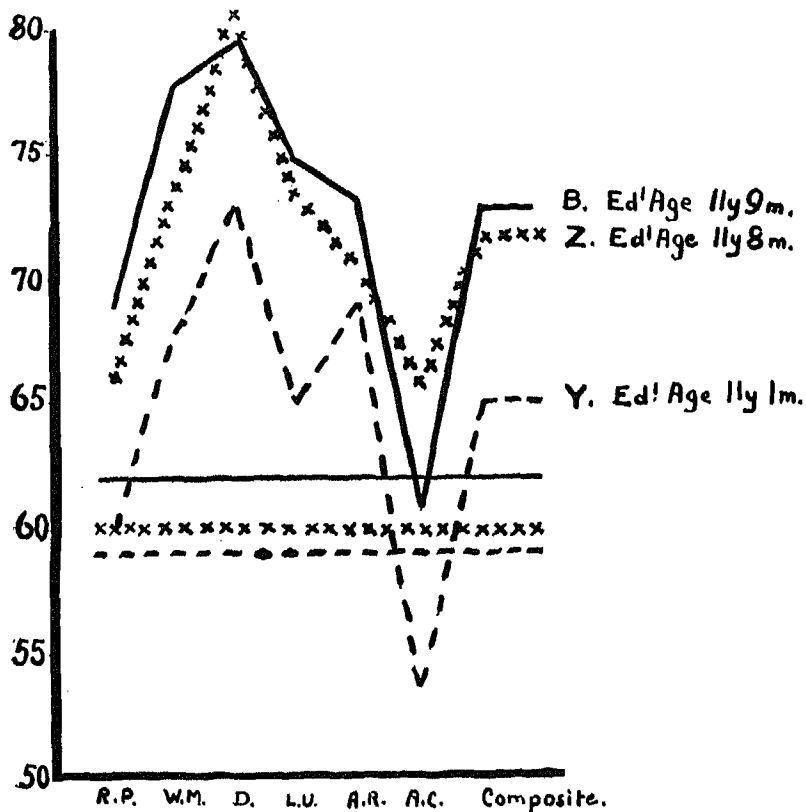


FIG. II.

EXPERIMENTAL CLASS B AND CONTROL CLASSES Y AND Z, JULY, 1931.



KEY TO ABBREVIATIONS ON GRAPH.

- R.P. = Reading Paragraphs.
- W.M. = Word Meaning.
- D. = Dictation.
- L.U. = Language Usage.
- A.R. = Arithmetical Reasoning.
- A.C. = Arithmetical Computation.

Figs. 1 and 2 show class results of 1931 in terms of average scores and educational ages. These are the results which are seen by the head master or inspector who has not tested the intelligence of the classes, and so long as we remember that the Experimental Classes have an advantage in intelligence we need not try to reckon too narrowly what

must be the effect of that advantage in terms of scores. That will not give true accuracy in this case, but only its semblance.

Broadly, we may say that the individual methods used in both classes in the Experimental School have proved their value. Classes with higher intelligence show achievement corresponding to that intelligence, and one cannot reasonably ask for more.

Except where *A*'s achievement in computation shoots up in Fig. 1 while other classes go down the curves show a great similarity in shape, and a tendency to lie above the American line of norms. The American line is perfectly horizontal, so that our zig-zag line must indicate differences between Scottish and American education. Our children excel in understanding the meaning of words and in spelling, while the computation test shows in their worst light all classes except *A*. On the whole the curves of Experimental and Control Classes are parallel, but not coincident. Spelling is the subject that draws them closest together. "Language Usage" separates *A* and *X* and *B* and *Y* the most widely (apart from computation in the case of Fig. 1).

Finally, we would return to the statement made at the beginning of this report, and repeated in various forms throughout it. The aim of individual work is not to make pupils gain high marks in standardized tests or other examinations but to secure adequate mastery of the school subjects along with independence, joy in work, and opportunities for individual development. A class like *B* which gives the child an amount of freedom quite unusual—probably unexampled—in Scottish schools, nevertheless gives perfectly adequate results when measured by objective standards. Further, an inspection of the distribution of marks in each subject shows that the individual work classes do not have long "tails," although one might expect that slow pupils going at their own rate would tend to get far behind their fellows. The control classes show more examples of very low marks. In the Experimental Classes it is those with exceptionally high scores who deviate most from the mean. Is this not because individual methods have given them a chance to use their powers not perhaps fully, but better than they could otherwise have done?

To sum up, the results of Standardized Tests suggest that the teacher who desires to use individual methods because she believes that they make possible for children independence, social training, and breadth of interests not attainable under the usual class methods, need not fear that the more formal work of the class will inevitably suffer. On the other hand, the teacher who feels that efficiency in the tool subjects is the most important aim of the earlier years of schooling may also find in individual methods the most effective means of attaining her goal.

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RÉSUMÉ.

UNE ÉTUDE SUR L'EFFICACITÉ DU TRAVAIL INDIVIDUEL.

Il est à désirer, qu'on possède des mesures objectives des progrès, dans les branches essentielles, des élèves qui ont suivi des méthodes "Individuelles" plus modernes. Cette étude donne un rapport sur une expérience, tentée dans deux classes d'une école d'Edinbourg, où l'on suit, depuis plusieurs années, de telles méthodes. Deux classes furent instruites selon un plan individuel, l'une se servant d'une forme modifiée du "Dalton plan" tandis que l'autre exécutait un groupe de "projets" divers, tout en employant quelques "assignments." On choisit, dans d'autres écoles, où l'on ne connaissait que les méthodes collectives, deux classes parallèles, et l'on fit passer à toutes les classes des "Tests" fréquents d'Intelligence et de Connaissances Scolaires, pendant les années 1927-31, l'âge des élèves étant de sept à onze ans.

Dans tous les cas les classes Expérimentelles gagnèrent, dans les Tests de Connaissances, des notes supérieures à celles des classes employant les "méthodes de classe" traditionnelles. Il paraît cependant que les Classes Expérimentelles étaient plus intelligentes que les Classes de Contrôle, ainsi, quand on calcule la Proportion d'Accomplissement, les différences tendent à disparaître.

On discute l'importance des Proportions d'Accomplissement et l'on n'est pas convaincu que, dans le cas cité, ce critère présente la vue la plus exacte des faits. Même si l'on accepte les Proportions d'Accomplissement, on trouve que les Classes Expérimentelles fournissent un travail supérieur à ce que l'on pourrait attendre d'elles, et que, en plus, les élèves possèdent l'indépendance, le tact social, et la liberté de cultiver des intérêts plus larges, lesquels, prétend-on, sont les bienfaits caractéristiques, résultant des méthodes plus modernes.

ÜBERSICHT.

UNTERSUCHUNG DER LEISTUNGSFÄHIGKEIT VON „INDIVIDUELLER ARBEIT.“

Es ist wünschenswert, einen objektiven Massstab für die Leistungsfähigkeit in den Hauptfächern bei Schülern zu haben, die nach den neueren individuellen Methoden unterrichtet worden sind. Diese Abhandlung berichtet über einen Versuch mit zwei Klassen an einer Edinburger Schule, wo einige Jahre lang individuelle Methoden angewendet wurden. Zwei Klassen wurden nach individueller Methode unterrichtet; in einer wurde eine Variation des Daltonplanes genommen, während die andere eine Gruppe varrierter Projekte durchführte und einige besondere Anweisungen befolgte. Parallele Klassen in anderen Schulen, wo nur nach Klassenmethoden unterrichtet wurde, nahm man dazu, und alle Klassen wurden wiederholt während der Jahre 1927-1931 mit Intelligenz- und Schulleistungstests geprüft. Das Alter der Schüler betrug 7 bis 11 Jahre.

Die Versuchsklassen gewannen in allen Fällen in den Schultests höhere wirkliche Resultate als die Klassen mit der traditionellen Klassenmethode. Jedoch scheint es, dass die Versuchsklassen intelligenter waren als die Kontrollklassen; daher verschwinden die Unterschiede, wenn man die Leistungsverhältnisse berücksichtigt.

Die Bedeutung der Leistungsverhältnisse wird besprochen, und es wird für fraglich gehalten, ob in diesem Falle dieser Massstab den Tatsachen am objektivsten gerecht wird. Sogar wenn wir die Leistungsverhältnisse berücksichtigen, finden wir, dass die Versuchsklassen ihre Arbeit ebenso gut oder besser tun, als man vernünftigerweise von ihnen erwarten konnte, und ausserdem haben die Kinder die Selbständigkeit, das Gemeinschaftsgefühl, und die Freiheit, weitere Interessen auszubilden, was alles als typischer Vorzug der neueren Methoden gilt.

SOME CONTRASTED ASPECTS OF PSYCHO-ANALYSIS AND EDUCATION.*

By M. N. SEARL.

- I.—*Similarity, contrast or complement?*
- II.—*Difficulties of early childhood.*
- III.—*Aim of early psycho-analysis.*
- IV.—*Technique.*
- V.—*Aim and technique of education.*
- VI.—*Views of a group of educators and analysts on the value of psycho-analysis to the educator.*

I.—SIMILARITY, CONTRAST OR COMPLEMENT?

WE cannot contrast dissimilars. We need first to be sure of some common ground. This ground, common to education and psycho-analysis in its clinical aspect, expressed in its briefest terms, consists both in aim and in means. The aim of both is the widest and fullest possibility of psychical development. The means, in both cases, is understanding. The educator and the analyst believe that understanding, the result of a beneficent intelligence applied to the problem of the unknown, is of prime importance as a means of psychical development. That is a very large and very important common ground. Why, then, should the main theme of this paper be that of contrast?

We have, as a matter of fact, already left a contrast hidden in our common ground. The specific and distinctive sphere of education is the promotion of understanding of the *external* world, physical, intellectual, and æsthetic. It is concerned with consciousness and its expression.† Psycho-analysis means the acquiring of understanding of the *internal*, psychical world, in which emotions bulk large, and the unconscious is the main problem. The psycho-analyst, with well-founded trust in the forces of life and love, believes that by means of this understanding you can free them of difficulties; they will then function at their highest pressure to make use of the opportunities provided by education.

But this gives us another aspect of the case. It is one not of contrast but of complement. And before we can decide the question of contrast,

* A paper read to the Education Section of the British Psychological Society on March 2nd, 1931.

† I am not attempting a definition of education and its aims, and certainly do not limit the conception of its activity to that of imparting knowledge. But whatever other aim it may, or may not, include, I think those I have mentioned above are permanent and distinctive.

complement, or both, we clearly need to know something more about the difficulties which, as I have stated, without proof, can be cleared out of the way of the fuller functioning of these dynamic forces, out of the way of their sublimation into interests of manifold kinds. What are these difficulties, the developmental difficulties of childhood?

II.—THE DIFFICULTIES OF EARLY CHILDHOOD.

I must take for granted that none of my readers believes in the "paradise" of childhood, in early years of unalloyed bliss. There is, of course, no need to deny that for a healthy, well-nourished, well-cared-for infant there is a great preponderance of happy over unhappy hours. It is, none the less, probable that, even so, the occasional unhappiness may have a sharper intensity, a greater vividness, a lesser diffusion, than the far more frequent happiness. Of the years succeeding the months of infancy, we have no such right to speak in an assured tone of a heavy balance in favour of happiness.

I am not, however, making any attempt in this paper to apportion the two, or to give a complete picture of the child. My concern here is with his *difficulties* and with these alone. Unless this fact is born in mind, the drawing will seem almost ludicrously out of proportion, the picture one of unrelieved gloom, all shade and no light. I do not disregard or undervalue, because I do not mention, the buoyancy of childhood; its laughter and fun; its ecstasies; its deep contents and solemn joys; its spirit of adventure and its valiant persistencies. Here, I repeat, I am enquiring into childhood's difficulties, and the origin of these difficulties, never entirely absent, however favourable the environment, and however great their quantitative increase in unfavourable environments. To the frequency of even their more extreme forms Mrs. Isaacs' recent paper "Some Notes on the Incidence of Neurotic Difficulties in Young Children," bears convincing testimony.*

Robert Bridges, in his "Testament of Beauty," talks of man's young years as

"the terrifying jungle of his haunted childhood where prehistoric horror still lurketh untamed" (p. 83).

Again

"and oh! in tender years the mind of childhood knoweth torments of terror, fears incommunicable, unconsolable, vague shapes; tho' oft they be the dread boding of truth, against which man's full Reason at grips may wrestle" (p. 57).

* See this *Journal*, Vol. II, Nos. 1 and 2.

This is a far journey from the Wordsworthian picture of early childhood. Yet no one who has indeed wrestled to bring reason to the aid of a terrified child can doubt the validity, in this case, of Bridges' picture. Such a one will also acknowledge, with Bridges, that the terror has a truth for the child, a feeling of reality, however alien it may be from our truth, our reality.

We start, then, with a fact too familiar to us all to need further demonstration from either poetry or science: the fact that there can exist in a child a world of feeling, or emotion, completely inaccessible to reason: that there can be an apparently unbridgeable gap between emotion and reality. This fact seems to me the kernel of all difficulties of development. It is of far more frequent and universal occurrence than we are inclined to believe. To approach it with some understanding we need to take a brief survey of the child's early years from this angle.

An infant normally has few and simple, but urgent and imperative, desires connected with strong feelings. He has, however, no power to satisfy these more urgent desires without the help of mother or nurse. He has no power to know anything of the whys and wherefores of any lack of satisfaction. When he has what he wants he has the feeling "good." When he has not what he wants he has the feeling "bad." Similarly the person or object from whom he gets what he wants feels to him "good"; the person or object from whom he does not get what he wants feels to him "bad." That is, any dawning perception of people and of situations is to a very large extent indeed in terms of his own feelings. In technical language, the libidinal life of the young child is very strong; his ego, that part of him which links with external reality, is very weak. Never again, in any even approximately normal life, will that individual tend to be so frequently, so easily, and so completely overwhelmed by his own feelings. To him, his wishes, desires, or urges, call them what we will, together with their outcome in emotions, are the one reality. With these he is familiar; these he knows. With such a weak sense of any other reality, his external world, as soon as knowledge of it begins to awaken, is understood very largely in terms of that with which he is already familiar—himself and his own feelings. As I have said, people, things, who do not *do* what he wants, are, for him, "bad," in the same way and at the same time that he himself has the feeling, "bad," when he does not *get* what he wants. No explanation, no reason is possible. Means of communication lag behind the strength of his desires. Peace can be restored by some type of immediate satisfaction only. For the fulfilling of the baby's self-preservative needs, the mother is, in the majority of cases, adequate. She acts as complement

to the undeveloped ego of the child. As a complement to the ego in the direction of his wish-feelings, as contrasted with his needs, she is not and cannot always be adequate. There must inevitably be times when the child's wishes are not satisfied; there is no possibility of giving understanding of the reason; for the child it remains an autocratic denial. When, for whatever reason, the little child has to endure lack of satisfaction of very urgent wishes, when he wants very intensely and does not get what he wants, he tries to fight for his satisfactions; the feeble ego, driven by the unsatisfied wishes, struggles and screams. If this is still ineffective, the fight may become one of hate for the unsatisfying, therefore "bad" mother. He would if he could, scratch, bite, devour her. Let us again remember that he only can understand other people in terms of himself—with a difference, certainly, but with the difference disappearing under the drive of strong emotion. So that this "bad" mother is understood in terms of his own present feeling of "badness." *He* wants to hurt, bite, scratch, devour *her* when *she* will not do what he wants, i.e., when she is "bad." Therefore *she* must be wanting to scratch, bite, devour *him* when *he* is "bad." We know how the calmest physical restraint of a fighting, struggling child in a fury of rage does obviously feel to him the most intense danger at the time; as if you could only prove yourself not the monster of his temporary feelings if you allowed yourself to be hurt without a single movement of self-defence. *You* feel to *him* what *he* is wanting to be at the time—an invincible agent of destruction. And if, as must often happen, signs of anger or impatience escape, the child is confirmed in his feeling of an antagonist's ruthless wishes. *That* he understands: any sign of feeling he understands, *as feeling*. What he does not understand are the ego forces in control of the feeling, particularly when he himself is compact of feeling, and his small ego overwhelmed thereby. Aggressive feeling of any sort he is lightning-quick to recognize, although, as I have said, he is unable to understand the ego forces in control of it. Hence the resultant true-untrue picture. A little girl of three was avidly collecting as many Christmas-cracker toys as possible. A grown-up gave her what she could. Suddenly the child stopped, looked wonderingly at her friend, and in a voice of bewilderment and incredulity asked, "Don't *you* want lots?" That was at three years old, and an advanced three-years-old. There was comprehension only of an aggressive wanting; none of a state of mind different from her own, even though there was an intelligent awareness of the difference.

To complicate the picture of the aggressive wishes we have a situation in human infancy unparalleled in the rest of the animal world.

The nursing mother is not absorbed in the care of her offspring ; her interests are really divided, and the quite small baby knows that others, bigger perhaps, and certainly biggest, share her love, her attentions, her body. Here is a setting in which the little child, from, say, the latter part of the first year to the fourth or fifth, very responsive to the emotions and physical sensations which make up so much the biggest part of his own world, is well aware of the emotional and physical ties of others, and reacts very early with jealousy, rage, emulation, defiance ; all the gamut of emotions which add themselves on to his desire for possession of the mother's body, that first desired source of satisfaction ; that gamut of emotions which makes up the "Œdipus" situation.

We are not yet at the end of our complicating factors. We now come to one of the most important, and one which is among the most extraordinary of human psychical phenomena. I refer to the formation of the *super-ego*. I have hinted at the struggle of the weak ego, hard-pressed beyond its powers by the urgency of the child's desires. I have described how, at the height of his own furies, the child believes in a bad terrible mother built after his own pattern, with the strength which he has not, but would have. When she is present, and as soon as his own fury passes, this belief loses its validity. She does not, after all, scratch him, tear him to pieces. But suppose him to be alone, in an agony of desire and of fury, unhelped, with no presence to support his weak sense of reality by proof given that the mother is not what he feels her to be ; her absence or her attentions to others, proving her to be, on the contrary, the worst of bad mothers. What happens then ? Well, we have the germ of what in later life becomes in its more conscious aspects, that "conscience" which "doth make cowards of us all." In the little child's mind is created, with the extreme of vividness, a kind of permanently present mother, made out of the omnipotence of his own feelings ; a kind of "feeling" mother, remote from reality, who yet is there to give a queer kind of help to the hard-pressed ego in the restraint of aggressive wishes. This internalized mother, so completely a replica of the little child's own feelings, says, "I will love you if you are good. If you are bad, I will be bad to you. If you want to bite, I will bite you. If you want to scratch, I will scratch you. If you want to dirty, I will dirty you." And from now on, its strength increased on every similar occasion, there is permanently set up, in what soon becomes the unconscious of the child, the principle of talion punishment—an eye for an eye, and a tooth for a tooth ; there is a consequent terror, not by any means always restraint, of his own aggressive wishes, whether or not they are carried out in reality, and whether or not they meet with

rebuff and punishment. If they do, belief in this inner mentor is confirmed. If they do not, or however far removed the punishment is from the severity of its decrees, it still cannot be finally convicted of error. Because it does really *feel* like that. All the gamut of the emotions of guilt, dread, remorse, unhappiness, shame, has been set going ; and with the concrete vividness of the early imagery of feeling, the little child *is* being bitten, scratched, dirtied, burnt—inside his mind. Only with tremendous efforts and much psychic work does he shake himself to some extent free of this incubus. His naughtinesses are a result of this struggle. It is most important that he should *not* care too much, that he should overcome the strength of this primitive, inner force. He needs, in proportion to its strength, to achieve both an inner hardening against it and a strengthening of his sense of reality, his ego, by testing the results of naughtiness in his external world. He seeks to know whether his vague foreboding of dire results, their origin unknown, is really justified. He has many ways of defence, not all of them by this taking the offensive. One of the most universal and familiar to us is that known as repression. If he can subdue his aggressive wishes there will be no fear of counter-aggression. But to subdue wishes is a task to which the child is unequal ; the ego can simply refuse to carry them out, where it is very strong in proportion to their strength. When it is not, it can take a kind of flight from them, can ignore them, can sever the links between them and the world of reality ; it simply does not know them—they are unconscious. Into the different results of these various methods of self-defence I must not now enter. I have already over-simplified the picture. For the sake of clarity I have described the formation of the early layer of the super-ego in terms of the relation between child and mother only. I have omitted the rôle played by the aggressive feelings to the father. But I hope I have made sufficiently clear the fact that there is very early formed in the child's mind a realm entirely separated from and therefore inaccessible to reality, a realm in which wish and anxiety-provoking counter-threat remain most closely linked, but into which no word of reason can directly penetrate. This situation is very prodigal of the psychic forces. Out of the severance between the world of the wish and the external world arise many inhibitions, many hindrances to effective sublimation. The child's life of love and interest may be held up, not by wisdom, not by judgment, but by remorseless fear out of touch with reality. Then its spare forces, those not required for his own sexual life, cannot be used to strengthen the ego and widen its scope in sublimations, in the great variety of interests which life contains, and which education can further. For there is no sublimation without love.

These are some of the difficulties of early development. The human species possesses great resilience and adaptability, has a great number of possible ways of dealing with difficulties. Many of these difficulties become hidden or disguised in favourable cases. We psychologists do not believe they disappear. They remain in the form of a character trait, some slight neurotic tendency, some holding back of powers which otherwise might function more freely. For instance, in spite of flexibility and adaptability at the surface, the human species has at the core great powers of retention: something that welds all its past into a unity, into an individual different from any other. It is this unity of every piece of experience, of whatever type, with the psychological disposition and capacity. It is where some of these experiences have been the interaction of disposition and environment have been particularly unfavourable that we find our problem children unable to disguise their difficulties, and unable to make use of the opportunities which education affords. I again point out my reference to this is common to all children, of whatever type of environment; I want to show to what an extent some proportion of them seems to me to be the outcome of the very conditions which at present govern infancy. You will not need to be told of their enormous increase in environmental conditions are particularly unfavourable. No need for my intention to detail faults of early training.

But perhaps there is one point on which I may usefully insist. My insistence on the child's awareness of *emotional* reactions has already suggested where it lies. It is this. The accent of importance for the child is to be placed not so much on *what happens*, on the event, as on the emotional background from which it proceeds. This is true to some extent all through life. The very same act or event to two different people with whom he may be equally familiar, means to him two entirely different things. Mistaken handling by a parent on whose general emotional attitude the child can rely will produce a less harmful result than more theoretically correct handling which is based on distrust or uncertainty in this respect. Of course, the matter is complicated. The child's own emotional life influences very seriously the judgment of the emotional lives of others. There may be no without any, or with the very slightest objective justification, that one can do very little. But the main point with regard to this is this: no information, no theoretical knowledge, can influence the deep-seated core of the personality from which the emotional life proceeds. This it is which determines, far more than theory and ideas, whether a child is in good hands or not. (Naturally an

person will not be satisfied with the possession of a more or less satisfactory emotional life, but will want to supplement it with knowledge. But here I begin to trench on the question of the value of a knowledge of psycho-analytic *theory* to the teacher, which I take up later.)

III.—THE AIM OF EARLY PSYCHO-ANALYSIS.

Perhaps we are now in a better position to appreciate my earlier reference to the aim of analysis as being concerned with that part of the mind in which emotions bulk so large. I suggest as a short and convenient description of a *normal* person, that unknown ideal, that he is of untrammelled emotions and is untrammelled by them. To help a child in his struggle with his emotions, and with the life of phantasy which links emotions with thought, is to render him the help he most needs for his psychical development. Affectionate handling of a struggling individual, a *person*, not a thing, is the first and positive measure. Avoidance of situations which arouse or stimulate strong feeling is the second and negative measure. Before he can understand speech these are the most that can be done. But once speech becomes comprehensible there is at least a further possibility, that of expert help. For the giving of this help there are two other main conditions. (1) The expert must himself be familiar with a wide range of his own early difficulties and have the freedom of his own mind; (2) he must provide a suitable environment (a subject to which I will shortly return). You will notice that I have put only one condition with regard to the child—that he should be able to *understand* speech, not that he himself should be able to talk. For the little child expresses his phantasy-life far more readily, fully, and accurately in *play* than in speech; although speech as it develops will have its own important part, and take the foreground, play receding into the background, when childhood is beginning to pass into puberty. For what is play other than an expression of phantasy? We find in it all the wishes for ideal situations, all the fears of terrible punishments. These are there for us to understand. And as we *do* understand, and *because* we understand, the whole drama of the child's life is gradually unrolled before our eyes, until by actual experience he has found himself unharmed by the crudest and most primitive and violent of his own wishes and by the crudest and most primitive and violent of anticipated punishments. Then *he* knows and understands. The scope of his understanding has in this way been enlarged to include the whole of his young psychic life. Of such understanding he is as capable as any adult. For, as we have seen, he is

aware of the inner world of emotions before the exterior world and its objective values.

Thus the whole work of the analyst lies in showing the adult) that he understands, that it is safe to understand, that stands two truths at the same time, both what situations *feel* to the child, and what they really are. In this way, in our company, the child tests his capacity to stand the full force of his emotions, he has to repeat all the traumatic situations of his young life, all the things which he did battle with these inexplicable and threatening. I could not, even had I time, convey to you the vividness and the power of resource with which these scenes are staged and acted by the children in their analysis. Earlier the child had had to live the world largely alone. Not the most loving and comprehending mother could give him any direct help. No one could explain them to him, he had to call to his aid reality-remote help, as we have seen, from an inner emotional source of receiving the treatment and to mete out to others—not at all necessarily that he did so. I find that what he *wants* to do as well as what he *does* is known: for example, that where he is cutting, burning, drowning with water in a harmless enough fashion, with, perhaps, wood or paper he has to cut, burn, drown the bad parents, or brother or sister or some other case may be, understanding “bad” in the primitive sense which we have earlier explained. And yet, in spite of the anxiety which is certainly shown in the circumstances, the threats of course do not materialize. He has an opportunity of comparing what he feels *ought* to happen, *must* happen, with what actually *does* happen. That is, for the first time he has the possibility of applying this new understanding to all the dark corners of his mind, hitherto hidden by what in fairy tale become dragons, ogres, monsters, with whom who accompany the stories of fairies and fairy princes and princesses. The ego, helped by another’s understanding, has proved its capacity to tolerate the full force of the most aggressive wishes. And this is a piece of experience of which the value cannot be overestimated; the effect diminished. Further, in the course of the analysis various psychic forces previously absorbed in the various forms of attack, threat and defence; these forces can now be utilized in the service of reality and in furtherance of social relationships. In other words, the sublimations set in with great rapidity; the child lays hold of new means of varied interests, and is firmly enough based on his feet to weather the lessened storms of emotion. Education can proceed without impediment. This increasing hold on life and its interests

proceed will certainly not leave the boy, youth and man in a worse position than the child with regard to his emotional life.

IV.—THE TECHNIQUE OF EARLY ANALYSIS.

There still remains the question of technique, the *how* of child-analysis. This I must give briefly and omit most of the *why*, the theory underlying the technique.

First of all, let me say that in carrying out a child analysis we are making a momentous exploration into very explosive material; we are not trying to avoid anxiety. On the contrary, where it is hidden we are out to discover it. There is no possibility of understanding something that does not exist, that is not felt. But it will be a difficult and delicate proceeding, and we do not want anxiety to appear in too overwhelming proportions. No analytical interpretation, no proof of our understanding can reach a kicking, screaming, stamping child. With this proviso, we are out for as unimpeded expression of every emotion and phantasy as is consistent with lack of serious damage. Therefore we want to reduce interferences and prohibitions on our part to a minimum, and that minimum in line with a clearly objective standpoint. Our arrangements are made accordingly. As for the room itself, it allows access to water; it has a floor which can harmlessly be soured with water; it is simply furnished without being unattractive; it has a couch, a table, two chairs, a chest of drawers of equal size. Every child has his own set of toys, small ones, allowing a wide range of variety: people, animals, cars, trains, etc., a ball, gum, paper, string, a writing pad, scissors, pencils, chalks, paints, bowls for water, etc. These are kept locked. The only things used in common are the furniture of the room, and soap, towel, etc., for washing. By these means cause of disturbance through one child damaging or envying the possessions of another is reduced to a minimum. Indeed, there is practically no real cause of disturbance from any happening in the analytical room, apart from the unfolding of the child's own psychical drama. As far as possible, both for this reason and as evidence of the trustworthiness of the analyst in fully respecting the child's confidences, no signs are left of occupation by a previous patient. Complete privacy is ensured. One has a fifty minutes session, allowing ten minutes for clearing up between patients. One sees the child for that fifty minutes a day and at no other time. One follows the child's lead, withdrawing oneself into the background as far as possible, but playing with him, and acting out his suggestions wherever required. To this state of affairs there are three exceptions.

- (1) Whenever anxiety is indicated, one interprets the child's behaviour; that is, one shows one's understanding of its cause in terms of unconscious tact or phantasy. For here actual or external causes for fear are excluded by the conditions governing the hour. Anxiety is shown in a great variety of ways—inability to play, stereotyped play, great punctiliousness, "May I do this?" etc., as well as in its more obvious forms, of which aggressiveness and rage are the most common.
- (2) One interferes to prevent either personal caresses or hurt, and more damage to the room than can be put right in the ten minutes allowed for clearing up. This interference is necessary only where interpretation, possibly inaccurate, does not resolve the difficulty; it is always by deflection, never by stricture. "Do it another way." "Will you do it to something else and play that it is me?" and so on. There is never any judgment of motive, no indication that the child should not *want* to act so; the criterion is result.
- (3) Very rarely at times of stagnation and uncertainty of its cause, one draws on one's knowledge of the phantasies of the previous hour, and representing them with the little toys, restarts the child's play.

Thus, just as the technique of adult analysis aims at freedom of thought and feeling through freedom of speech, so the technique of the analysis of young children aims at the same freedom by releasing play from all inhibitions.

You will see from my brief, merely outlined account of child analysis that we do not hesitate to encounter the crudest phantasies and the most violent anxieties and emotions. But you will also see that we only do this with a full understanding of the difficulties involved and in a very carefully regulated environment. One does not make any incursion into the child's secret imaginings without knowing that the adaptation to them already achieved will be upset and that to reach a final and thoroughly satisfactory one we may have to do much arduous work.

V.—THE AIM AND PSYCHOLOGICAL TECHNIQUE OF EDUCATION.

I now come to the question of the aim and technique of *education*. Here I shall be brief and very general, and do little more than repeat my opening remarks on this point. You could tell me more about it than I can tell you. I will take a very recent and important statement

of educational aim. I quote from Mrs. Isaacs' "Intellectual Growth in Young Children," p. 20. She says, "For me, the school has two main sorts of function. (a) to provide for the development of the child's own bodily and social skills and means of expression; and (b) to open the facts of the external world (the real external world, that is, not the school "subjects,") to him in such a way that he can seize and understand them." Even should we take a less advanced position and include in educational aim the teaching of school subjects, we remain in the same position for contrast of aim. The aim of education is to widen the sphere of mental and physical activities in the external world. The aim of psycho-analysis, whatever its outcome, is entirely concerned with the widening of the sphere of knowledge of the child's own internal world. Surely it will one day be a commonplace that the most important sphere of knowledge is that which lies closest to us, is most vital to us, but is the latest to be fully explored, the knowledge of one's own psyche. When that is fully realized, then, but not until then, the analysis of children can be included in the scope of education. Until that happens we must rather insist on contrast than on similarity.

The sharpest contrast is given when we come to the question of technique. Here again, on the subject of the technique of education, I can remain on quite general ground, and not enter at all into the vexed question of varieties and modifications. For even the most ardent believer in educational "freedom of expression" is not out to seek the anxiety of the child when it is hidden, to bring it to light. Anxiety and satisfactory sublimation do not go hand in hand. Anxiety in its various manifestations, stupidity, dullness, listlessness, defiance, restlessness and so on, is the one great hindrance to educational possibilities, the sometimes hidden, sometimes open foe of the teacher: one which in any case remains inaccessible to direct combat: which at best can only be left isolated and undisturbed by drawing the interests of the child on to a sphere where it does not usurp the psychic field. Only with accurate understanding of the cause of anxiety can this foe be met. For this purpose one needs to enter with the child into very explosive territory, and one does not know how soon one will emerge again. To vary the metaphor, one is, for the sake of cure, exposing and not covering up very sore surfaces of the psychic life, which are therefore very sensitive to every movement of the analyst. The full force of concealed and forgotten jealousies and hates and angers and aggressions and emulations, as well as of the less sublimated types of love, comes to the surface. The analyst's attitudes, acts, and relations to others have special significances in which past situations and not present reality play the

vastly preponderating rôle. This, of course, is known as the transference situation—the transferring of emotion from one setting and person to another setting and person. Now to act as a focus for disturbing emotions is not the ideal situation for the educator. On the contrary, it is the least desirable. Transference there will be in any case. The same teacher will have a different significance, a different atmosphere, for every child according to the earlier situations which that child is adding on to the present. And the handling of this *inevitable* transference situation, with its inevitable strifes and jealousies, will give the teacher quite enough difficulty without incursion into any other storm centres. I have failed if I have not left you with an impression of the careful regulation and stabilizing of environment with which this is undertaken in analysis, and which is utterly impossible in school life, or for more than a limited period like one hour. The effective technique of education stimulates interests and avoids or shifts anxieties. The effective technique of psycho-analysis never avoids anxieties, and frees but does not stimulate interests; and this by the resolution of anxiety in the open field of understanding. This only becomes possible where the analyst goes along with the child the whole way, seeing as the child sees, knowing how the child feels, though not *feeling* as he feels; never deviating from the child's side to take up a position of his own except in the special circumstances I have already described. For it is the *child's* anxiety we want to understand. And if we take up a position of our own and tell the child to come to it, we are not meeting *his* anxiety. If we say, "This is what you should do," "This is how you should or should not feel," we are asking the child to overcome his anxiety himself and take up *our* position. We are not then helping the child to understand *his* anxiety. That is why the attitude of the educator is irreconcilable with the attitude of the analyst: there is no possibility of amalgamation.

To pass the bounds of conscious knowledge into those of the unconscious, whence anxiety proceeds, we need an analyst and not an educator. The educator's first concern is the child's ego. In order to give the help he has at his command for its development, the enlarging of the sphere of the child's conscious knowledge and social activities, he has at times to exercise his authority with regard to the child. He then tells him not merely how it is *wise* to behave, but how he *must* or *must not* behave. He makes full use of the child's affection and confidence (his positive transference in technical language), for furthering the ends he has in view, and he uses it *as such*. He tries, if he is a good educator, by all means in his power to overcome or shift the child's dislike, defiance, distrust—the negative transference. The analyst, too,

has sometimes, very rarely, to exert his authority, and tell the child that he must not do such and such a thing, although it is true that he does this always with the hint that he is not stopping him from putting his wants into action, but from putting them into that particular kind of action : " Do it another way " ; and the reason is always one perfectly obvious to the child except when he is quite blinded by emotion. This authority is exerted *only* in a limiting direction, never with command or advice about what he should *do*. It is the child's own ways we want to know. Again the child's positive transference in sublimated form, his confidence and affection, are of great importance to the analyst ; if they were entirely absent no analysis could be carried on ; there would be no points of contact. But the analyst never leaves it merely as such ; he always shows the part which is played in it by memory, or re-living, of earlier situations. And most important of all, he rejects neither its cruder manifestations, nor the most violent forms of the negative transference, those which are so troublesome to the teacher. The only proviso is that they are not played out on the person of the analyst. One and all forms of the transference, positive and negative, receive the same understanding in terms of unconscious phantasy and of previous experience.

Indeed, we may well say that while the fundamental contrast between education and psycho-analysis in both aim and technique lies in their relation to the conscious and to the unconscious mind respectively, the handling of the transference situation is in the very centre of the two pictures, and shows this contrast most clearly.

VI.—VIEWS OF A GROUP OF EDUCATORS AND ANALYSTS ON THE VALUE OF PSYCHO-ANALYSIS TO THE EDUCATOR.

In the last section of my paper, on the help which psycho-analysts may offer to the educator, I cannot do better than quote the views of a group of analysts, who included amongst their number educators of experience, and analysts of children. About two years ago they tried to clarify their views on this subject.* I quote from our conclusions :

" (a) *The teachers' own analysis.*

(1) The analysis of the teacher is bound to be helpful in his work for just the same reasons and in just the same way as it is helpful to anyone who is concerned with direct human relationships. Through it,

* The group consisted of Mrs. Isaacs, Mrs. Klein, Miss Barbara Low, Miss Ella Sharpe, and myself.

he will come to recognize and appreciate his own inner development and the problems arising from it, and thus gain illumination for the inner problems of his pupils and a truer perception of the child's mind.

This gain he will then be able to use, not as attempting the rôle of analyst, but as teacher, equipped with sufficient understanding to act (where action is urgent and essential) in the most useful way; and to take any steps needed to put the child into the most suitable circumstances for a deeper and more permanent treatment.

(2) If, however, the analysis of the pedagogue is to bear this fruit, *it must be a deep and thorough analysis*, carried out by a competent, fully trained analyst. There can be no such thing as a shorter analysis for teachers. If the depths of guilt and anxiety are to be stirred, then the work must be carried through to some conclusion, or the last state of the educator will be worse than his first. If he goes back to his teaching with his stability shaken and his conflicts aroused but left unresolved, then he will inevitably be a far poorer educator and a less suitable companion for children than before.

It has to be made clear, moreover, that a deep and full analysis may mean, not months, but years of work.

(3) Further, it has to be recognized that no amount of analysis can turn a really unsuitable person into a good pedagogue. Successful work as an educator depends upon certain fundamental attitudes to children and to their intellectual and ethical needs, attitudes which analysis cannot develop upon an unsuitable soil. It is rarely that even a deep and full analysis is able to make any ultimate change in the fundamental attitudes of a person. Given the natively good teacher, analysis can greatly reduce any impediments to health and usefulness which may hamper him, as they hamper everyone in their human relations.

(b) *Knowledge of psycho-analytic theory.*

The direct application of *any* knowledge to the practical issues of education is clearly much more than an intellectual affair. It involves the play of the teacher's own conduct and mental attitudes, which in their turn rest upon his own inner adjustments. But of this particular body of knowledge these considerations are most profoundly true. Any attempt to apply the theory, calling for a change in one's own behaviour and affecting one's immediate understanding of others in a social relation, will necessarily involve the deepest inner adjustments. To some people of lesser stability, mere contact with the theory is disturbing; to all but the most stable—those who have themselves

reached the most fortunate inner compromise, or have enjoyed a thorough analysis—the effort to *act* upon the theory, in such important personal relationships as that of the parent or the teacher, inevitably releases guilt and anxiety, disturbs psychological balance and blurs social perceptions and responses. Moreover, it confuses the intuitive responses in this way without giving any theoretical understanding which can in fact be used in their place. We do not consider that psycho-analytic theory can have any direct application to the problems of the pedagogue. Not even his own thorough analysis will enable the teacher to detect the complexes of his pupils, or to make any reliable interpretation of their behaviour. Even the experienced analyst avoids *ad hoc* interpretations, lacking the full context of current associations. Any attempt to assign this or that specific piece of behaviour to this or that complex or unconscious trend can only give him a quite false and misleading illusion of insight and superior knowledge.

Furthermore, the attempt to make direct application of psycho-analytic theory to the methods or standards of education, unless on the basis of the fullest knowledge and most mature understanding of all parts of the theory, commonly leads to nothing but a distorted emphasis of partial aspects. For each person tends to pick out of the total body of theory those particular parts which chime in with his own deeper psychology in one way or another. Of the many instances which come to our notice, we may perhaps quote one. This is the case of an intelligent, able and sympathetic head mistress, who had read a good deal of psycho-analytic literature and had become very impressed with the idea that “repression” was to be avoided at all costs. When a little girl died, in her school, the head mistress wrote to the mother inviting the small sister of the dead child to come and stay in the school for a time, and talk about her loss to the people who had known her sister, on the ground that she “must not be allowed to repress her grief.” Now this again was a woman who would not have dreamt of doing such a thing out of her ordinary standards of what was kind and wise. Her normal judgment was distorted and her understanding blurred by the tyranny of a theory. It is, of course, true that *any* badly assimilated theory can spoil good practice; but from the very nature of the case there is none with such possibilities of dangerous application as psycho-analysis, for there is none which plays so readily into the hands of the unconscious.

Quite commonly, however, the effect of psycho-analytic reading is not to thrust the parent or teacher into hasty and complex-ridden action, so much as to paralyse him with anxiety and an exaggerated

belief in the importance of everything he does and every word he says. Mothers of a sensitive and responsible type are particularly liable to such inhibition, which reacts most adversely on the children themselves.

In brief, we have found that even considerable knowledge of psycho-analytic theory *may* be a hindrance rather than a help to the pedagogue, spoiling his natural relation with his pupils through the release of guilt and anxiety, or urging him to precipitate action in the phantasy of a superior wisdom. Intelligence and knowledge are no guarantee of practical wisdom here, for they lie at the mercy of the unconscious in any attempt to apply psycho-analysis in practical life. Hence the real value of psycho-analytic information to the pedagogue will depend very largely upon his own deeper psychological attitudes and the degree of his own stability. If himself well adapted and stable and reasonably free from neurosis, he will undoubtedly find his educational work illumined by a thorough study of the light which psycho-analysis is able to throw on the development of the child and the nature of the educational process.

We have thus felt it to be our serious responsibility to point out some of the dangers and difficulties arising either from scrappy information or from the fact that even more solid knowledge has yet to be filtered through the personal psychology of those who try to make use of it. We may now very briefly suggest some of the directions in which we feel that a wide and well-ordered study of psycho-analytic theory may be of positive use to the practical educator.

(a) One direction is in helping the educator to set his standards of what is normal behaviour in a child of any given age. There is undoubtedly a tendency for many parents and many schools to set their standards far too high, and to put too great a cultural burden upon little children especially. Yet even here it has to be emphasized that only a thorough and balanced view of psycho-analytic theory can be of use. Any superficial emphasis on the side of licence for the *id* impulses, with a corresponding neglect of the guilt factors, may do more harm than good. The question of normality is by no means an easy one, just because it is complicated by the factor of guilt and the reaction-formations, from a very early age. There is, of course, no need to point this out to analysts themselves; but there is still need to qualify in this way any suggestion we may make to educators as to the wisdom of not setting their standards too high. It is safe to say that psycho-analytic theory does not call for any attempt on the part of the ordinary parent or teacher to lower his standards below those of the more liberal-minded educators of the present day, who have a native sympathy with children

and tolerance of their ways. Anything more than this could only be undertaken in an experimental way by one who had a full understanding of psycho-analytic theory as a whole and a full awareness of the guilt factors. Moreover, as regards the educator himself, individual standards depend largely upon individual adjustments, and cannot be altered to any great extent by mere knowledge.

It may be worth while saying that these remarks are based not only upon the general experience of the members of this group but also upon the intensive experimental work carried out by Mrs. Isaacs for over three years with a group of young children.*

(b) Another direction in which psycho-analytic knowledge may be of help to the parent and teacher is in enabling them to see when a child is emotionally disturbed. Here, as Miss Low has pointed out in a recent book,† the relation of the teacher to the psycho-analyst is parallel with his relation to the doctor. "... he (the teacher) can do exactly what he now does in relation to the school doctor—that is, by means of first-hand observation and wider understanding, he can bring to the analyst those children who are in need of expert treatment." Upon the teacher and the parent inevitably rests the responsibility of recognizing the first signs of neurosis and delinquency, as of fevers and digestive troubles, and any knowledge which will assist him in this is a very great gain all round.

(c) Psycho-analytic theory, moreover, clearly yields some of the indispensable data upon which the broad outlines of *educational method* must be based. Mrs. Klein's contributions to our understanding of the function of *play*‡ offer an important example. These have greatly reinforced the view that play has as important a place as direct instruction in the upbringing of children, and have shown the deeper reasons for this view. Another instance is the general psychological truth so immediately relevant to educational technique recently voiced by Dr. Ernest Jones. "The more a child's development comes about through its interests and affections, rather than through moral training, the less sharp are the unavoidable conflicts and their consequences."§ It is obviously very important for the educator to know that this is not an expression of personal sentiment, but a scientific proposition.

* See *Intellectual Growth in Young Children*, by Susan Isaacs; Routledge, 1930.

† *The Unconscious in Action*; University of London Press, 1928.

‡ See, inter alia, *The Development of a Child* (*Int. Journal of Psycho-Analysis*, IV); *Infant Analysis* (*Int. Journal of Psycho-Analysis*, VII), and *The Psycho-Analysis of Children* (to be published shortly).

§ *Psycho-Analysis*; Benn's Sixpenny Library.

Again, knowledge of psycho-analytic theory is very much needed in any attempt to discover the stages in the development of children's interests.

In general, the ultimate development of a sound pedagogy may depend upon the work of analysed educators. But our appreciation of the undoubted values of psycho-analytic theory to the practical educator must not be allowed to blur our sense of the deeper distinctions between the actual processes of education and of analysis. It cannot be said too often or too clearly that no amount of knowledge, and not even his own analysis, will justify the teacher in trying to do any kind of analytic work with his pupils. The conditions under which successful analytic work can be carried on are now well known and standardized, and they are emphatically not those of the classroom. Nor, as we have shown, can they be realized alongside the relationship of teacher and pupil. If the pedagogue attempts to reach the unconscious by interpretation, or by intimate conversation intended to tap the deeper levels and going beyond the limits of spontaneous understanding in ordinary human relations, he is bound to stir anxiety in his pupils to a degree far beyond his measure of control, and is not likely to achieve more than this. Even in the most favourable cases, where the approach to the deeper levels appears to have been helpful, there can be no certainty that the apparent benefit will endure, or that it is not outweighed by less obvious harm. The teacher will be unable to assess, for instance, the degree to which his attempt at interpretation or deeper intimacy of sympathy has led to a fixation of transference which he is quite unable to resolve.

With all these precautions in mind, however, it is our view that if the demand for lectures to teachers on psycho-analysis arises, it should be met, like any other demand for knowledge."

There is little to add to this considered point of view, but I should like to return for a very short time to a quite personal standpoint. Out of my experience as a child analyst there emerge in particular two aspects of the relation between child, and parent or educator.

The first is this. Only a person of very pronounced psychical stability can afford to dispense with a system of rules and regulations. (Psychical stability, by the way, is, of course, very far removed from rigidity: it allows of a very living flexibility). In other words, a freedom which does not become licence can only satisfactorily be accorded to children of healthy mentality by a parent or educator of exceptional personality. The child needs help and support in his struggles for domination of his emotional life. Where we cannot give him the best

help, it is cruelty to deny him the second or third best. To remove restrictions from some types of children, and leave them to battle alone, insufficiently supported, with their inner world of wish and threat, is to throw on them a burden they cannot bear. They need constant proof that there does exist a restraining force unlike the primitive psychic force by whose help they themselves have attempted to carry out this restraint.

Secondly : Understanding of the earliness and severity of the child's inner struggles leaves one with a more clearly defined view of the early *individuality* of the child than is often obtained otherwise. To treat the child from his earliest days as an individual, and not as a little animal or toy, tiresome or amusing, to accord him the consideration of a grown-up when he is behaving as a grown-up, without demanding that at other times he *should* behave as a grown-up—this, in addition to a happy love relationship and impossible without it, is to give him the greatest support in carrying his struggles to a successful conclusion. I can speak from experience of the effect on a child of consideration in stretching past him, knocking into him, etc., equal to that which one would, without question, give to an adult. Otherwise he feels treated merely as a thing. I begged four-year-old Peter's pardon for a slight collision. He looked at me in amazement, walked to the other side of the room, sat down, and said, " You *are* a lady, aren't you ? "

Only appreciation of the extent and reality of the child's early difficulties can free us from some aspect of that contempt of childhood which is still so widespread, and which arises from our contempt of our own child-selves. Patronage is a sign of it ; over-valuation, the according of undue importance, is a revolt from it. Only where such contempt is really absent can we truly value the child's individuality.

CONCLUSIONS.

The educator must always remain distinct from the analyst, since the two differ in aim and technique ; while yet their functions can be complementary. The difference is determined by the nature of the child's emotional difficulties in early childhood and his primitive methods of dealing with them, resulting in a gap between the conscious and the unconscious psyche. Since the latter is the seat of both the most primitive urges and the most primitive menaces to them, its exploration can only be undertaken in highly specialized conditions, impossible in an educational environment.

RÉSUMÉ.

QUELQUES ASPECTS CONTRASTÉS DE LA PSYCHANALYSE ET DE L'ÉDUCATION.

L'éducation se préoccupe de ce qui est conscient et appartient au monde extérieur, la psychanalyse de ce qui est inconscient et appartient au monde intérieur. Pour comprendre la technique très précise et spécialisée de la psychanalyse il nous faut comprendre l'intensité de la lutte chez le jeune enfant contre l'inquiétude, et le sentiment de danger agressif qu'il attribue non seulement aux limitations de l'autorité extérieure mais aussi à ses forces intérieures de contrainte. Aucune technique appliquée à l'âme consciente ne peut influencer fondamentalement cette situation, puisqu'il existe un gouffre entre les craintes émotives et la réalité, ce qui se manifeste dans le cas d'un enfant terrifié "sans raison." L'éducateur se garde, lui et son élève, le plus possible des affects troublants, tandis que l'analyste les recherche exprès, puisque seule l'expérience personnelle de l'enfant qu'ils ne sont pas à craindre, et la pleine connaissance de tous les éléments agressifs, peuvent jeter un pont par-dessus ce gouffre.

C'est l'opinion réfléchie d'un groupe de psychanalystes et d'éducateurs que l'expérience de la psychanalyse a une valeur beaucoup plus haute pour l'éducateur qu'une simple connaissance de sa théorie, qui peut même, dans certains cas, être un désavantage. Mais cette expérience, d'une analyse personnelle, profonde et étendue, ne mènerait point à une fusion des fonctions du psychanalyste et de l'éducateur, qui doivent rester distinctes. Une étude systématique de la psychanalyse peut, cependant, fournir une base scientifique à des données importantes pour l'éducation.

ÜBERSICHT.

EINIGE EINANDER ENTGEGENGESETZTE SEITEN DER PSYCHO-ANALYSE UND DER ERZIEHUNG.

Die Erziehung hat es mit dem Bewusstsein und der äusseren Welt zu tun, die Psychoanalyse mit der unbewussten und innerlichen psychischen Welt. Um die sehr sorgfältige und spezialisierte Technik der Psychoanalyse zu verstehen, muss man die Intensität des Kampfes, den das kleine Kind gegen die Angst führt, und das Gefühl der aggressiven Gefahr begreifen, welche es nicht nur den Widerständen der äusseren Autorität, sondern auch seinen inneren Kontrollkräften zuschreibt. Keine Untersuchungsmethode, die auf den bewussten Geist gerichtet ist, kann diese Sachlage fundamental beeinflussen, weil eine Kluft zwischen gefühlsmässiger Furcht und der Wirklichkeit besteht, wie leicht im Fall eines „grundlos“ geängstigten Kindes bewiesen wird. Der Erzieher schützt sich und seinen Schüler so gut wie möglich vor störenden Affekten, während der Analytiker sie absichtlich herbeiführt, da nur wenn das Kind aus eigener Erfahrung ihre Gefährlosigkeit und alle Angriffsfaktoren genau kennt, diese Kluft überbrückt werden kann.

Die betrachteten Ansichten einer Gruppe von Psychoanalytikern und Erziehern deuten an, dass die Erfahrung in der Psychoanalyse von weit grösserem Wert für den Erzieher ist als eine blosser Kenntnis ihrer Theorie, welche in gewissen Fällen sogar nachteilig sein kann. Aber diese Erfahrung einer tiefen und gründlichen Personalanalyse würde zu keiner Verschmelzung der Rollen des Psychoanalytikers und der Erziehers führen, welche getrennt bleiben müssen. Ein geordnetes Studium der Psychoanalyse kann jedoch eine wissenschaftliche Basis für einige Gegebenheiten bieten, die für die Erziehung wichtig sind.

A STUDY OF COGNITIVE ERROR.*

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- I.—Introduction. *The problem of cognitive error.*
- II.—Theories of cognitive error.
 - (a) Spearman.
 - (b) Wilcocks.
 - (c) Selz.
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 - (e) The different theories compared.
- III.—The present investigation.
- IV.—Source of the present data.
- V.—Description of the *F* tests.
- VI.—Results obtained with the *F* tests.
- VII.—Methods by which errors studied.
- VIII.—Tabulation of error frequencies.
- IX.—Influence of "g" in erroneous cognition.
- X.—Influence of position of test figures.
- XI.—Qualitative analysis of errors :
 - (a) Errors due to erroneous processes.
 - (b) Errors due to erroneous criteria.
 - (c) Errors due to multiple causation.
- XII.—Conclusions.
- XIII.—Summary.

I.—INTRODUCTION : THE PROBLEM OF COGNITIVE ERROR.

THE problem of error in Cognition has received but scanty consideration in experimental psychology. A cursory glance through the enormous literature on the experimental study of Perception, Cognition, and Thinking, convinces one of this. Even the indefatigable *Denkpsychologen* of Germany seem to take only a very subsidiary interest in this important topic. Ernst Mach entitles a large volume *Erkenntnis und Irrtum*,†

* Part of a thesis approved for the degree of Doctor of Philosophy in the University of London. The writer is greatly indebted to Prof. C. Spearman for guidance in the course of the research.

† E. Mach ; *Erkenntnis und Irrtum*, esp. p. 108 ff.

but presents no formulated theory of error. The most significant statement he makes on the subject is that accurate cognition and error arise from the same source, and that discovery of errors acts as a corrective for cognition (p. 116).

Typical of the Gestalt school is Köhler's perfunctory treatment of the matter, in a book which spares neither space nor fervour on behalf of the antithetic problem of insight.* He distinguishes between "good" errors, errors due to lack of comprehension of the conditions of a task, and "bad" errors, these last being ascribed to "after-effects of former genuine solutions"; but no general explanation of error is formulated.

Lindworsky, in a most characteristic and elaborate study of thinking,† scatters innumerable suggestions throughout his work and cites a number of suggestive protocols, which reveal how associative reproduction and habit embarrass a process of inference (e.g., p. 26). He also gives a list of kinds of errors committed (p. 217) such as errors due to remembered knowledge (*Gedächtniswissenschaft*), others due to neglect of a premiss, and others due to going beyond the premisses. But all this is very casual and is not followed up in a thorough way. Titchener‡ does not even mention the matter, although he devotes a number of pages to illusions of all kinds. As for Thorndike, whose definition of Intelligence as the "power of good responses from the point of view of truth or fact" is famous—one cannot find a formulated theory of error in any of his writings.

Yet it requires little consideration to see the importance of a knowledge of the conditions governing cognitive error. The idiot is just as much distinguishable from the genius by his greater proneness to error as by his lesser capacity for successful cognition. The innumerable errors one commits in everyday life have been noticed by Freud.§ Moreover, if we are aiming at establishing positive and definitive laws of cognition what better check on them can we have than the study of failures of adequate cognition? Finally, the study of cognitive error is in the direct lineage of the investigation of such pathological cognitive conditions as Aphasia, the contribution of which to psychology cannot be overestimated.

* W. Köhler: *The Mentality of Apes*, 2nd ed. 1927, p. 194.

† "Das schlussfolgernde Denken," *Stimmen der Zeit*, 2te Reihe, Ergbd. I, 1916.

‡ *Textbook of Psychology*, 1916, esp. chapter on Thought, p. 505 ff. The types of error—if such they may be called—exemplified in optical illusions or defective reproduction of tachistoscopically presented material (e.g., Wulff, *Psych. Forsch.* I, 1922) lie beyond the scope of this paper.

§ *Psychopathology of Everyday Life*.

II.—THEORIES OF COGNITIVE ERROR.

(a) SPEARMAN.

But while this question has been neglected by the majority of psychologists, it has received the attention of a few. Prof. Spearman, consistently with his programme for the enunciation of definitive laws of cognition, has formulated what is perhaps the most comprehensive and lucid explanation of errors, and this on the basis of experimental findings.* The following is a summary of his discussion. He finds that errors are due to :

- (1) Reproduction replacing Education.†
- (2) A reproduct from one "system of remembrances" being displaced to, or invading, another "system of remembrances." This would include errors due to subsumption of a percept under a familiar concept (cf. *infra*, p. 301), and subsequent education in terms of this concept. Line‡ came upon numerous errors of this sort in the course of his investigation.
- (3) Perseveration, i.e., the mental persistence of an experience for some time after the stimuli which gave rise to it have ceased acting.
- (4) An item not yet present in consciousness influencing an item present in consciousness; or one item of cognition being influenced by a simultaneous item; or a relative cognition displacing an absolute cognition ("confluence"). These are "displacement" errors.
- (5) Wrong sensory experience irradiating a correlate education.
- (6) Conation and Affection—but these are never really the proximate causes.
- (7) The omission of part of the evidence for an education—but this is only a remote cause.

Thus, error appears to be mostly due to the transference of an item of cognition to the wrong position or circumstances, because of resemblance

* C. Spearman : "The Origin of Error," *Jnl. Gen. Psychol.* I, 1928.

† For a detailed analysis of the distinction between these processes, see Spearman, *The Nature of "Intelligence" and the Principles of Cognition*, 1923, and a short but valuable outline of his theory by Ballard, "Noegenesis," *Jnl. Gen. Psychol.*, II, October, 1929. Education refers to the process by which knowledge, in the form of relations or correlates (see *infra*, p. 301) is "drawn out or 'educated' from the very nature or essence of the characters as presented" to the mind, even if this be for the first time (Spearman, *op. cit.* this footnote, p. 342). Reproduction describes the process by which knowledge comes to the mind through previous experience—i.e., what is generally referred to when we speak of remembering, recall, or association of ideas.

‡ W. Line, "The Growth of Visual Perception in Children," *Brit. Jnl. Psychol.*, Monog. Supp. XV, 1931.

or contiguity—the two conditions for reproductive association. Error, therefore, seems mainly ascribable to the Principle of Retentivity.* The comprehensiveness of this explanation of errors becomes clear when we compare with it two other views of the nature of error. But before giving an account of these, we may note that the above seven sources of error seem to fall into two main groups. In the first three, error appears to arise from *erroneous processes* substituting appropriate ones; in the rest, the processes may be correct but their *criteria* (e.g., for eduction), or starting points, may be distorted. The division between these two groups can hardly be clear cut, but we have found it useful in our investigation.

(b) WILCOCKS.

The two alternative theories referred to are presented in a paper by Wilcocks.†

Wilcocks devotes a brief experimental study to errors in thinking. In this he maintains an explanation of the nature of such errors, derived from certain findings of G. E. Müller and his associates in their work on memory, in opposition to the explanations formulated by O. Selz.

(c) SELZ.

Selz‡ bases his theory of error on a theory of productive thinking evolved from experiments with single words. In these his subjects were required to supply a reaction-word of a prescribed category to an exposed stimulus-word; e.g. to supply the "whole" for the stimulus-word "wick" (lamp), or a definition, and so on. The characteristics of the thought processes are taken to be introspectible when there is a delay in responding. The fundamental process, he says, is that of "actualizing knowledge" (*Wissensaktualisierung*). The stimulus-word, task (*Aufgabe*), and response-word together form a "complex" (*Komplex*) the terms of which tend to reinstate one another or the whole complex. Actualizing the knowledge in any thinking task of the sort mentioned consists in satisfying an "anticipatory schema" (*antizipierendes Schema*) set up by the task and the stimulus-word, in conformity with the laws of "complex completion" (*Komplexergänzung*). Facts extrinsic to an actual task

* C. Spearman: *The Nature of "Intelligence" and the Principles of Cognition*, p. 132.

† R. Wilcocks: "On Substitution as a Cause of Errors in Thinking." *Amer. Journ. Psychol.*, 40, 1928. pp. 26 ff.

‡ Selz's theory of the nature of errors is presented in his book *Zur Psychologie des produktiven Denkens und des Irrtums*, 1922. See also, Wilcocks *op. cit.*; J. Lindworsky, *Zsch.f.Ps.* 92, 1923, p. 365; G. E. Müller, *Zsch.f.Ps.* 82, 1919, p. 102 ff; and K. Koffka, "Bemerkungen zur Denkpsychologie," *Psych. Forsch.* IX, 1927, p. 163.

make it possible for a number of solutions to satisfy any given anticipatory schema. Any solution, however, constitutes a *Sachverhältniss* or the consciousness of terms related in a definite way; hence every problem will have its specific *Sachverhältniss*, and so definitively characterize the anticipatory schema; with the result that an appropriate response is selected, from among the numerous possibilities, to complete the complex. Great play is also made with the directive influence of "determining tendencies," after the fashion of the Külpe school. Stripped of its elaborations, this analysis of productive thinking appears to bear a close resemblance to Spearman's *Law of Correlate Education*, which states that "the presenting of any character together with any relation tends to evoke immediately a knowing of the correlative character."*

From this standpoint, Selz maintains that the errors his subjects made were not due to reproductive tendencies aroused by the stimulus-word, but to *Wissensaktualisierungen*. Errors arise because the actual problem set is not served by the thought-process, but a task displacement occurs; only a part of a task, or a misunderstood, or a related task, is effective instead of the correct task; but the thought-process is the same as for the correct and full task. The reason why a complex is thus only partially efficient is because some of its constituents have low "dispositional effectiveness" (*dispositionelle Wirkungsgrade*), or degree of consciousness, and so do not influence the complex. Thus the meaning of a stimulus-word may be "thought" as a particular concrete instance, and so the task be displaced; or a difficult task may be displaced towards a more familiar task with higher *dispositionelle Wirkungsgrade*. Distraction of attention lowers the efficiency of a task. Selz found that the abstract, most general, characteristics of a task have a higher degree of "abstractive preparedness" (*Bereitschaft*) than particular characteristics, and, therefore, tended to make the tasks partially efficient, and consequently prone to result in error. According to Selz, therefore, error is to be explained on the basis of the incomplete functioning, or deformation, of a task, but not of the thought-processes, which are the same for correct as for erroneous thinking. This view is undoubtedly interesting, and seems to us to differ only in its form of statement from Spearman's analysis of the same facts, listed by us under 2, 4, and 5 above (p. 299).

(d) MÜLLER.

Wilcocks, however, pierces, or at least urges as applicable, an explanation of errors derived from the study of errors in reproduction,

* C.. Spearman, *Nature of "Intelligence," etc.*, pp. 91-107.

to which Müller and Pilzecker devote a chapter in their book,* Müller and Pilzecker give, as the chief explanation of reproductive errors, the law of substitution. *Active Substitution* occurs as follows: A syllable "A" is associated, by one of the usual processes of association, with a syllable "B." "A," however, also brings to consciousness a syllable "a" similar to itself, though not having anything in common with it, and so also syllable "a" can bring to consciousness "A." Now when "a" is presented to the subject, instead of reproducing a syllable "x," associated with "a" in some way, the subject reproduces "B." In the case of *Passive Substitution*, the subject does not reproduce "B" when "A" is presented to him, but "b," a syllable similar to "B." A frequent form of *Passive Substitution* occurs when an unusual syllable is replaced by one more familiar, e.g., a word in daily use ("zur" for "sur"). The two processes often act together, as when a syllable is wrongly reproduced because of its superior reproductive preparedness. Syllables are associated as standing in certain relations (e.g., of succession) to one another, so that the reproduction of a second of a pair of syllables is a task-directed process of thought, says Wilcocks, and will take place according to Selz's law of complex-completion. Substitution he takes to be the reproduction of a syllable not only because it is similar to an anticipated syllable, but more so because it has greater reproductive preparedness. This second factor is important as explaining reproductions which conform only remotely to the anticipation, but arise with sufficient promptness and clearness not to be recognized as incorrect. This analysis, however, refers mainly to Müller's *Passive Substitution*; but *Active Substitution* may also be interpreted from this point of view. Thus, "B" may be reproduced instead of "x," in the example given above, because of its greater reproductive preparedness; or because the association between "a" and "x" is weak; or because the characteristics in regard to which "a" resembles "A" are relatively prominent, and so (by Selz's law of partial efficiency) reproduce "B."

In addition to the law of substitution, which Wilcocks has thus utilized, Müller and Pilzecker formulate a number of other sources of error. Among others, the false reproduction of a syllable "y" because it has the same absolute position in series S_p , as the correct syllable "z" has in series S_q ; and other positional associations of such kind.

The associated syllables may be given a "meaning" or "meanings" while being learnt, and when one of these is exposed a syllable might be invented instead of the associated syllable, on the basis of this "meaning." This corresponds to the errors by subsumption mentioned above.

* Müller and Pilzecker, "Experimentelle Beiträge zur Lehre vom Gedächtnis," Erg.-Bd. I, *Zsch.f.Ps.* 1900. Ch. VII, esp. pp. 212-216.

Another source is "contingent responses" (*Verlegenheitsnennungen*). The subject supplies a syllable arbitrarily because he cannot recollect the correct, or any associated, syllable. Müller and Pilzecker note that this occurs mostly with weak subjects. Some of the errors we encountered in our tests would probably be explained by some such principle.

(e) THE DIFFERENT THEORIES COMPARED.

We might attempt to bring out the difference between Selz's explanation of errors and the view of Müller-Pilzecker-Wilcocks as follows: Selz holds that errors are due to the *partial efficiency* of an "anticipation," or to a displacement of the task. The criterion of the reasoning, that is to say, is inadequate, but the process of reasoning is the same as in successful instances of problem solving. The other view is that errors arise by the substitution of a wrong *response* to an, on the whole, adequate "anticipation" based on adequate grounds, by reason of, in particular, the superior reproductive preparedness of the erroneous solution. That is to say, the criterion is sufficient, but a spurious *process* enters into the solution. Wilcocks observes, but does not make clear, that these two views are not mutually exclusive, but rather complementary. Our juxtaposition of them perhaps reveals this more clearly; the more so, as it is evident that both are included in Spearman's analysis of the origin of error. We have already shown this for Selz's view; the other view, obviously, merely states in a roundabout way that associative reproduction, occurring instead of, or in addition to, what Prof. Spearman calls correlate eduction, leads to error.

III.—THE PRESENT INVESTIGATION.

The present paper offers further empirical data which seem to confirm, and in some ways to amplify the comprehensive analysis of the nature of cognitive error which would be obtained by synthesizing the various theories proposed by Spearman, Selz, and Wilcocks and Müller-Pilzecker.

IV.—SOURCE OF THE PRESENT DATA.

The data were gathered in the course of an investigation of the potentialities of a battery of perceptual tests of "g" devised by the writer.* The tests (hereafter referred to as the F tests) are six in number.

* M. Fortes, "Perceptual Tests of 'General Intelligence' for inter-racial use," *Trans. Roy. Soc., S. Africa*, XX, iii, 1932.

They are constructed entirely of meaningless two-dimensional spatial figures. That is, the figures do not represent objects or experiences as do photographs, diagrams, or drawings such as those used by e.g., Dodd,* Thorndike,† G. C. Myers,‡ and others; nor do they require to be recognized, in terms of past experience, as representational, in order to perform the test tasks. The construction of the tests was, for experimental purposes, based upon Spearman's Noegenetic theory of cognition. Thus success in the tests depends upon apprehending the relations constituting figures and the relations existing between figures.

The forms in which the tests are cast were selected and adapted from among those previously utilized in current or experimental intelligence tests. They were selected so as to require a minimum of explanation of the tasks, and so as to permit of the maximum exploitation of the perceptual material. The response in every case consisted of marking with a pencil the correct figure or figures in each subtest (or item) of a test. As no time limits whatsoever were imposed, the tests were essentially "power" tests. Each of the six tests comprises a number of subtests graded in difficulty according to the hierarchical "order" of the critical relation (the relation upon the apprehension of which the solution of the subtest turns). Thus at the easiest level the critical relation is of the "first order,"; a more difficult level is that of "second order" subtests; and so on.§

V.—DESCRIPTION OF THE F TESTS.

Some description of the tests employed, however brief, will add to the clarity of the discussion.

Test FI: In this test each subtest or test "item" comprises fourteen figures. Four are presented on the left of a vertical line (the "given" figures) and ten on the right (the "test" figures). The four "given" figures are all alike in some way; and the task is to mark the (five) figures among the "test" figures which are like the "given" figures.

Test FII consists of three parts. In Part A each subtest has one "given" figure and four "test" figures, and the task is to mark the "test" figure which is most like the "given" figure. In Part B two like figures are "given" and the task is to mark one of six "test" figures which is most like the "given" figures. Part C is the same as

* S. C. Dodd, "International Group Mental Tests," Princeton University, 1926.

† E. L. Thorndike, in *Jnl. Exp. Psychol.*, III, 1919, p. 13.

‡ G. C. Myers, *The Myers Mental Measure*.

§ See Spearman, *The Nature of "Intelligence," etc.*, p. 78ff., *Id. Brit. Jnl. Psychol.*, XV, 1925, p. 211 ff., and Line, *op. cit.*, for discussion of hierarchical order in cognition.

Part B except that there are three "given" figures, two being like—i.e., "right"—and one unlike these two—i.e., "wrong."

Test FIII has six figures or pairs of figures in each subtest, and the task is to choose the two figures or pairs of figures which "belong together best of all."

Test FIV is a pattern completion test which is excluded from the present discussion as it was too simple for our subjects.

Test FV may be compared with "narrative completion" tests. Each subtest shows only one figure in various stages of change. The first and final stages of the series are given on the left and right, respectively, of three columns each containing three figures. The task is to mark the three stages intermediate between the first and the last.

Test FVI is a rhythm completion test. The "given" part of each subtest consists of a sequence of figures arranged in the form of a rhythm such as *a b a*, *a b a*, and so on. The "test" part comprises six columns, each having three figures; and the task is to continue the "given" rhythm by selecting the appropriate figure in each successive column.

VI.—RESULTS OBTAINED WITH THE F TESTS.

Two hundred and forty school children of both sexes, averaging about thirteen years in age, took the tests. Application of the Tetrad Criterion showed that the tests measure only "g" and specific factors.* The split-half reliabilities of the tests vary from 0.3 to 0.9, and their correlations with "g" from 0.5 to 0.7.

Since "g" is the essential factor in reasoning,† we may conclude that these tests involve reasoning with perceptual data. The errors studied in this paper are therefore quite comparable with those investigated by Spearman, Selz, and Wilcocks.

VII.—METHODS BY WHICH ERRORS STUDIED.

In our analysis of the errors we have relied mainly on the objective records of our subjects' performance, that is, the actual test booklets as marked by them; but we have checked our inferences from these records by questioning a large number of children about the reasons

* The Tetrad Criterion, and the nature of "g" are fully elucidated in Spearman's *Abilities of Man*, 1927. "G" may be roughly identified as the essential factor in what is more commonly spoken of as "general intelligence," as measured by most intelligence tests. Details of our findings are given in Fortes, *loc. cit.*

† *Abilities of Man*, pp. 171-3.

for the solutions they offered and by obtaining introspections from several graduate students in psychology. The younger children, it is true, often gave reasons which were patently irrelevant to their actual choices, but those over twelve years usually appeared to have sufficient insight into their mental processes to furnish accurate grounds for their responses. However, while most of the purely cognitive sources of error would seem to be accessible by these methods, non-cognitive causes of error—e.g., fatigue, and conative dispositions or disturbances—cannot readily be traced, except by detailed work with individuals. We are, therefore, on safest ground when dealing with the purely cognitive factors in erroneous reasoning and perception.

The main implication of all the theories of cognitive error we have reviewed above, is that such errors do not arise by mere chance, but through the operation of the laws of cognition. Our qualitative analysis of the errors committed by our subjects will be found to bear this out, but we have also attempted a rough numerical check. In tests FII and FIII every response to a subtest must be either correct or incorrect (in FI, FV and FVI every solution of a subtest consisted of several responses some of which might be correct and some not). In test FII every response is limited to one of four or six possibilities, and every erroneous response to one of three or five possibilities. In test FIII there are fifteen possible responses for each subtest, only one of which is correct, and every error is one of fourteen possible errors. If error were a chance phenomenon we should expect to find the errors in each subtest occurring with about equal frequency. Thus in each subtest of Part A of test FII each of the three possible errors should occur about $33\frac{1}{3}$ times per cent ; in parts B and C of test FII each of the five possible errors in each subtest should occur about twenty times per cent ; in test FIII each of the fourteen possible errors should occur about seven times per cent.

VIII.—TABULATION OF ERROR FREQUENCIES.

On tabulating these frequencies of occurrence, we found, however, that the errors were by no means distributed in this chance way. Among the most difficult subtests there appears to be some tendency for such chance distributions to be manifested ; but as a rule, the errors tend to heap up in some positions and to be deficient in others. This suggests that erroneous cognition is determined by the stimulus situation, just as accurate cognition is. The somewhat cumbrous tables upon which these conclusions are founded cannot be reproduced in their entirety, but we give below two excerpts.

TABLE I.

SAMPLES OF ERROR DISTRIBUTIONS IN SUBTESTS OF FII.

| Subtest | FIIA. | | | | | | | | FIIB | FIIC |
|---------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Error. | | | | | | | | | | |
| a { H | 100 | 89.5 | 4.2 | 73.0 | 63.4 | 85.7 | 8.0 | 21.7 | 35.4 | 45.8 |
| M | 100 | 82.5 | 5.7 | 71.4 | 56.0 | 78.1 | 14.1 | 27.4 | 35.4 | 50.0 |
| L | 100 | 92.3 | 0.0 | 95.0 | 50.0 | 55.5 | 23.5 | 41.2 | 33.3 | 50.0 |
| T | 100 | 86.9 | 4.2 | 75.0 | 58.6 | 77.4 | 12.9 | 27.2 | 35.1 | 48.5 |
| b { H | 0.0 | 5.3 | 37.5 | 1.6 | 9.7 | 0.0 | 88.0 | 76.1 | 2.1 | 0.0 |
| M | 0.0 | 0.0 | 34.3 | 1.3 | 14.0 | 3.1 | 81.2 | 72.6 | 2.5 | 0.0 |
| L | 0.0 | 7.9 | 45.4 | 5.0 | 25.0 | 0.0 | 52.9 | 58.8 | 5.5 | 10.0 |
| T | 0.0 | 3.3 | 36.8 | 1.8 | 13.1 | 1.6 | 80.1 | 72.0 | 2.8 | 1.5 |
| c { H | 0.0 | 5.3 | 58.3 | 25.4 | 26.8 | 14.3 | 4.0 | 2.2 | 6.2 | 25.0 |
| M | 0.0 | 17.5 | 60.0 | 27.3 | 30.0 | 18.7 | 4.7 | 0.0 | 7.6 | 15.6 |
| L | 0.0 | 0.0 | 54.5 | 0.0 | 25.0 | 44.4 | 23.5 | 0.0 | 0.0 | 15.0 |
| T | 0.0 | 9.9 | 58.6 | 23.1 | 28.2 | 20.9 | 6.8 | 0.8 | 6.2 | 18.9 |
| d { H | — | — | — | — | — | — | — | — | 56.2 | 18.7 |
| M | — | — | — | — | — | — | — | — | 54.4 | 28.1 |
| L | — | — | — | — | — | — | — | — | 61.1 | 20.0 |
| T | — | — | — | — | — | — | — | — | 55.8 | 23.5 |
| e { H | — | — | — | — | — | — | — | — | — | 10.4 |
| M | — | — | — | — | — | — | — | — | — | 6.2 |
| L | — | — | — | — | — | — | — | — | — | 5.0 |
| T | — | — | — | — | — | — | — | — | — | 7.5 |

Numerical analysis of errors in test FII, by comparison of the error frequencies of three "g" subgroups. H=subgroup with highest "g" scores; M=subgroup with medium "g" scores; L=subgroup with lowest "g" scores.

Figures in light print show the percentage frequency of each possible error in a subtest, among all the errors committed by a "g" subgroup. E.g., in subtest 2 all of the three possible errors were committed by all three subgroups. Error *a* comprised 89.5 per cent, error *b* 5.3 per cent, and error *c* 5.3 per cent, of all the errors committed by the highest "g" subgroup in this subtest; and so forth.

The dark figures show what percentage of the *sum of all* the errors committed by the *entire group* of subjects each error comprises. Thus in subtest 2, error *a* accounts for 86.9 per cent of all the errors, error *b* for 3.3 per cent, and error *c* for 9.9 per cent.

TABLE II.
SAMPLES OF ERROR DISTRIBUTIONS IN SUBTESTS OF FIII.

| Subtest | 1 | 2 | 3 | 4 | 5 | 6 |
|---|--|--|--|--|--|--|
| Error. | | | | | | |
| a $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 1.2 \\ 0.0 \\ 1.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 9.3 \\ 9.1 \\ 9.2 \end{matrix}$ | $\begin{matrix} 4.3 \\ 8.0 \\ 4.9 \end{matrix}$ | $\begin{matrix} 2.7 \\ 6.9 \\ 3.2 \end{matrix}$ | $\begin{matrix} 7.4 \\ 11.1 \\ 7.9 \end{matrix}$ |
| b $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 4.8 \\ 0.0 \\ 4.0 \end{matrix}$ | $\begin{matrix} 5.2 \\ 0.0 \\ 4.1 \end{matrix}$ | $\begin{matrix} 12.0 \\ 9.1 \\ 11.8 \end{matrix}$ | $\begin{matrix} 1.7 \\ 4.0 \\ 2.1 \end{matrix}$ | $\begin{matrix} 17.5 \\ 17.2 \\ 17.5 \end{matrix}$ | $\begin{matrix} 48.1 \\ 44.4 \\ 47.7 \end{matrix}$ |
| c $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 72.3 \\ 75.0 \\ 72.0 \end{matrix}$ | $\begin{matrix} 68.9 \\ 60.0 \\ 67.1 \end{matrix}$ | $\begin{matrix} 0.9 \\ 9.1 \\ 1.7 \end{matrix}$ | $\begin{matrix} 55.5 \\ 52.0 \\ 54.9 \end{matrix}$ | $\begin{matrix} 4.8 \\ 6.9 \\ 5.1 \end{matrix}$ | $\begin{matrix} 20.4 \\ 11.1 \\ 19.1 \end{matrix}$ |
| d $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 1.2 \\ 0.0 \\ 1.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 6.7 \\ 2.7 \end{matrix}$ | $\begin{matrix} 15.7 \\ 45.4 \\ 18.5 \end{matrix}$ | $\begin{matrix} 4.3 \\ 0.0 \\ 3.5 \end{matrix}$ | $\begin{matrix} 32.4 \\ 37.9 \\ 33.1 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ |
| e $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 1.2 \\ 6.2 \\ 2.0 \end{matrix}$ | $\begin{matrix} 8.6 \\ 20.0 \\ 10.9 \end{matrix}$ | $\begin{matrix} 9.3 \\ 9.1 \\ 9.2 \end{matrix}$ | $\begin{matrix} 6.8 \\ 4.0 \\ 6.3 \end{matrix}$ | $\begin{matrix} 12.2 \\ 10.3 \\ 11.9 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ |
| f $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 0.0 \\ 6.2 \\ 1.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 0.9 \\ 0.0 \\ 0.8 \end{matrix}$ | $\begin{matrix} 0.8 \\ 0.0 \\ 0.7 \end{matrix}$ | $\begin{matrix} 0.5 \\ 0.0 \\ 0.5 \end{matrix}$ | $\begin{matrix} 2.5 \\ 7.4 \\ 3.2 \end{matrix}$ |
| g $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 5.5 \\ 0.0 \\ 5.0 \end{matrix}$ | $\begin{matrix} 0.8 \\ 4.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 1.6 \\ 3.4 \\ 1.8 \end{matrix}$ | $\begin{matrix} 1.8 \\ 3.7 \\ 2.1 \end{matrix}$ |
| h $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 14.3 \\ 6.9 \\ 13.3 \end{matrix}$ | $\begin{matrix} 6.8 \\ 0.0 \\ 5.8 \end{matrix}$ |
| i $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 4.8 \\ 6.2 \\ 5.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 21.3 \\ 0.0 \\ 19.1 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 4.3 \\ 11.1 \\ 5.3 \end{matrix}$ |
| j $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 0.9 \\ 0.0 \\ 0.8 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 1.6 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 0.6 \\ 0.0 \\ 0.5 \end{matrix}$ |
| k $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 9.6 \\ 6.2 \\ 9.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 3.7 \\ 0.0 \\ 3.4 \end{matrix}$ | $\begin{matrix} 24.8 \\ 20.0 \\ 23.9 \end{matrix}$ | $\begin{matrix} 2.1 \\ 3.4 \\ 2.3 \end{matrix}$ | $\begin{matrix} 3.1 \\ 3.7 \\ 3.2 \end{matrix}$ |
| l $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 1.2 \\ 0.0 \\ 1.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 20.4 \\ 18.2 \\ 20.2 \end{matrix}$ | $\begin{matrix} 0.8 \\ 0.0 \\ 0.7 \end{matrix}$ | $\begin{matrix} 0.5 \\ 0.0 \\ 0.5 \end{matrix}$ | $\begin{matrix} 0.6 \\ 0.0 \\ 0.5 \end{matrix}$ |
| m $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 2.4 \\ 0.0 \\ 2.0 \end{matrix}$ | $\begin{matrix} 5.2 \\ 13.3 \\ 6.9 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 8.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 5.9 \\ 3.4 \\ 5.5 \end{matrix}$ | $\begin{matrix} 4.3 \\ 7.4 \\ 4.8 \end{matrix}$ |
| n $\begin{cases} H \\ L \\ T \end{cases}$ | $\begin{matrix} 1.2 \\ 0.0 \\ 1.0 \end{matrix}$ | $\begin{matrix} 1.7 \\ 0.0 \\ 1.4 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ | $\begin{matrix} 3.7 \\ 3.4 \\ 3.7 \end{matrix}$ | $\begin{matrix} 0.0 \\ 0.0 \\ 0.0 \end{matrix}$ |

Legend as for Table I, except that H=subgroup with "g" scores above t mean; L=subgroup with "g" scores below the mean.

The consistency with which one subtest after another shows this heaping up of errors in certain positions sufficiently substantiates our conclusions.

IX.—INFLUENCE OF "G" IN ERRONEOUS COGNITION.

In seeking for the uniformities which lie behind cognitive error, it is necessary to ascertain, at first, what influence sheer differences in "g" ability have in regard to erroneous cognition. This was empirically decided in the following manner. In making the tabulations from which Tables I and II above have been extracted, our subjects were divided firstly into three groups, and secondly into two groups, on the basis of their scores in a standardized verbal "g" test, according as their scores fell into the upper, the middle, or the lowest third of the distribution of "g" scores; or according as their scores exceeded the mean or fell below it. (This is illustrated in Table I and Table II respectively.)

Inspection proved that the distribution of error frequencies were approximately the same for the different "g" groups, in each subtest of tests FII and FIII. This consistency of error at all levels of "g" ability indicates that the *kinds* of cognitive error which may arise in a given situation are not contingent upon the amount of "g" but upon the qualitative laws of cognition.

X.—INFLUENCE OF POSITION OF TEST FIGURES.

Tables III and IV show the total percentage frequencies of occurrence of the errors in tests FII and FIII for each position* or pair of positions.

TABLE III.

TOTAL FREQUENCY OF ERRORS (PERCENTAGE) IN EACH POSITION, TEST FII.

| Position. | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------|------|------|------|------|-----|-----|
| FIIA | 40.4 | 17.3 | 23.7 | 18.4 | — | — |
| Whole FII | 38.3 | 18.8 | 16.9 | 17.1 | 4.5 | 4.4 |

* The term *position* refers to the place occupied by each constituent figure or figure-pair of a subtest. Thus in test FIIA the figures making up the "test" part of each subtest are distributed in four positions in a row; in FIIIB and FIIIC the test figures are distributed in six positions and in two rows. In Test FIII the "test" figures are distributed in six positions in one or two rows, and every solution of a subtest involves *two* positions.

TABLE IV.

TOTAL FREQUENCY OF ERRORS (PERCENTAGE) IN EACH COMBINATION OF POSITIONS, TEST FIII.

| Combination of Positions. | | | | | | | | | | | | | | |
|---------------------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1,2 | 1,3 | 1,4 | 1,5 | 1,6 | 2,3 | 2,4 | 2,5 | 2,6 | 3,4 | 3,5 | 3,6 | 4,5 | 4,6 | 5,6 |
| 10.7 | 9.7 | 12.3 | 8.1 | 6.8 | 4.8 | 5.1 | 7.5 | 7.3 | 4.6 | 3.8 | 3.0 | 5.8 | 6.4 | 4.4 |

In test FII the total percentage frequency of errors in the first position is distinctly greater than in any other position. This suggests that the first "test" figure (i.e., the one nearest the "given" figure) tends to attract attention and be selected by sheer force of its position. Moreover this positional influence seems to be proportional to the distance of the figure from the "given" figure, as is evidenced by the regular decrease of the percentage frequency of error from the first to the sixth position in FII.

A similar distribution of the frequencies of errors is found in test FIII. The pairs which include the first position have the highest incidence, while those which include the middle (third) position have the lowest. The inference is that the attention is not equally distributed over all the figures, but is preferentially directed to those in the first position (on the extreme left), somewhat less considerably to those in the fifth and sixth positions (on the extreme right), and least of all to those in the mean positions. Hamid* has reported similar findings with verbal tests. Our data do not permit any conclusion as to the causes underlying this phenomenon. It may be a question of the transference of reading habits, or of attentional span, or of conation, as Hamid believes. At any rate, it seems clear that cognitive error is in some way influenced by this preferential direction of attention.

XI.—QUALITATIVE ANALYSIS OF ERRORS.

We turn now to the qualitative analysis of the errors. While many can be unequivocally attributed to some single factor, there is also a considerable number for which multiple causation must be inferred. The latter have, consequently, often been difficult to classify, and illustrate

* Hamid, *Brit. Journ. Psychol.* XVI, 1925, p. 100. Cf. also C. O. Mathews, *Journ. Educ. Psychol.*, XX, 1929, 129-134, who traces a similar positional influence in answers to an interest questionnaire.

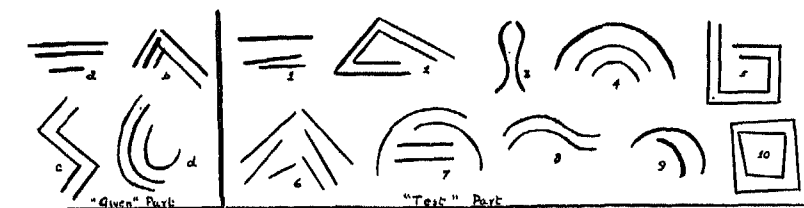
how complex the processes leading to cognitive error may be. The nature of our test material prohibits the reproduction of as many specimens of the errors as we should wish to present to the reader, and we shall therefore have to substitute, as best we may, verbal description.

We have indicated, in our introductory review of theories of error, that it is convenient to classify errors as due either to *erroneous processes* or to *erroneous criteria*. We shall employ this broad classification in our discussion, with the caution that this is dictated by convenience, and implies no assumption of a strict dichotomy among types of errors.

(a) ERRORS DUE TO ERRONEOUS PROCESSES.

It may be stated, as a general rule, that errors tend to occur in the F tests whenever in a given subtest the cognitive process necessary for arriving at a correct choice is replaced by any other cognitive process. This holds, as Spearman has shown,* when either reproductive or perseverative responses replace educative responses; but in our material it seems to be true, also, when responses based on the eduction of relations are substituted for responses based on correlate eduction.

Thus the reports of our adult subjects make it clear that the appropriate process of solution for test FI is as follows: First the relation or series of relations common to the four "given" figures must be cognized (relation eduction), and the correct figures in the "test" part must then be selected by educing them as correlates. Among our juvenile subjects this procedure was sometimes replaced by another. The subject endeavours to *match* each of the "test" figures in turn with one or each of the "given" figures, and if any relation is apprehended between a "test" figure and a "given" figure that "test" figure is selected as correct. (See Example 1.) We have ascertained by cross-examination



EXAMPLE No. 1.

TEST FI.

Illustrating *matching* errors. The correct "test" figures are Nos. 2, 4, 5, 7, and 8. Subject selected numbers 1, 4, and 6—obviously by matching them with a, d, and b, respectively, in the "given" part.

* C. Spearman, "Origin of Error," *loc. cit.*

that this procedure was not due to misunderstanding the nature of the task, but occurs whenever the "given" figures are cognized with insufficient determinateness. This procedure led to choices being made on the basis of educing relations—often incidental ones—between a "given" and a "test" figure.

A great many errors in FV and FVI were due to this matching procedure. In test FV, when the subjects failed to apprehend the relations between the "given" figures which indicate the change to be followed out, they often resorted to matching, in terms of likeness, the "given" figure with the "test" figures. In test FVI it is necessary to continue a "given" rhythm by educing the correlates. When the subjects failed to apprehend the sequence relation represented in the rhythm, they often attempted to match each of the "given" figures from among the "test" figures. Sometimes they tried to match the "given" figures successively; but this was not always possible, e.g., in the more difficult subtests. Hence some subjects contented themselves with matching as many of the "given" figures as was possible, irrespectively of their sequential position, and a few went so far as to match only one of the "given" figures throughout a subtest. Here again, misunderstanding of the task can be definitely excluded, since such errors occurred even with the most intelligent subjects, who had correctly solved a number of subtests in both FV and FVI.

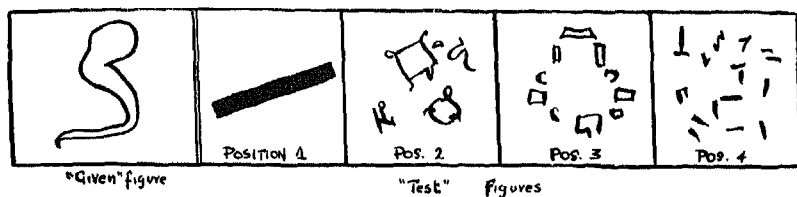
Errors due to the reproductive effect of the actual test material were very rare. Thus in several of the later subtests of FII we introduced figures resembling the correct "test" figures of some earlier subtests; but these were rarely marked. No doubt the unfamiliarity and diversity of the figures prevented their retention.

A few perseverative errors were noted in FII. The correct "test" figure would be selected in one subtest, and the figure falling in the same position would be selected in the succeeding subtest.

The most frequent reproductive errors were, however, of a different kind. We have used the term *subsumption* to describe them. The "given" figure (e.g. in FII) is subsumed under a familiar concept, by associative reproduction, and that "test" figure is then selected which seems to conform best to this concept; or an element of a "given" figure is subsumed and a "test" figure selected which seems to conform to the concept either in part or in entirety; or, more rarely, two figures are selected in FIII because both have familiar elements, although neither the figures nor the subsumed elements have any interrelationship other than this common familiarity of the elements; or, in FII, a figure may be selected without reference to the "given" figure purely because it can be subsumed.

Some instances are the following :

- (a) Test FII, the "given" figure is interpreted to be a "snake" and the "test" figure selected is said to look like a snake too (by imagining the elements joined in a continuous line—see Example 2).



EXAMPLE No. 2.

TEST FIIA.

Illustrating *subsumption* errors. The correct choice is position 1, the only "continuous" figure, like the "given" figure. Subject chose position 4, which, by supplementation, is interpreted to be a "snake" similar to the "given" figure.

- (b) Test FII. The top of the "given" figure is said to be "like a square" and the "test" figure with a "square top" is selected.
- (c) Test FIIE. The selection of the third and fifth figures as the best related pairs was justified by some of our subjects on the grounds that one was a square and the other a triangle.

It will be seen that errors of this type, as in examples (a) and (b) above, often involve not only subsumption, but also the distortion of the percepts of the "test" figures by supplementation, under the influence of what Selz would call the anticipating schema released by the subsumption of the "given" figure.

Anticipating schemas gave rise to errors in another way in tests FV and FVI. Frequently the subject would correctly apprehend the nature of the change represented in a subtest of FV, and would select successive stages among the "test" figures correctly; but would ignore the "given" beginning and/or end stages in doing so. Similarly, in FVI a rhythm would be correctly traced out in the "test" part; but it would not be continuous with the "given" rhythm. In these instances the subject makes the correct inferences from the "given" figures, but subsequently treats them as if they were independent of the "test" part. To put it in another way, the "test" figures are selected as correlates to a relation which has become entirely freed from the fundamentals from which it was educed.

These are the main types of erroneous processes we have been able to discover in our test material.

(b) ERRORS DUE TO ERRONEOUS CRITERIA.

We come now to the errors due to erroneous criteria. These comprise a larger variety of types than do the errors due to erroneous processes. But again, a general principle may be stated. Errors in this category occur when the cognitive energy is displaced from the total perceptual situation to a part, a feature, or an aspect of the situation. The following instances will make this clear*:

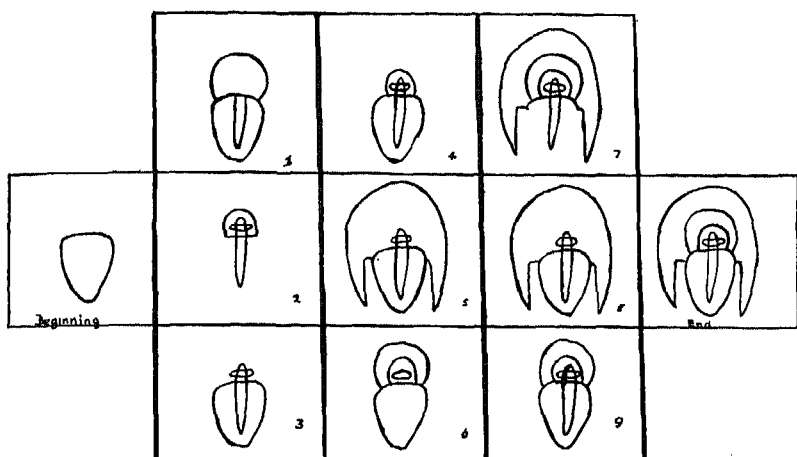
(a) Relations are educed with reference to a part of a figure instead of the whole figure. Often this is a prominent or projecting part of a figure; sometimes it is the top of the figure; sometimes it is the central or striking element in a figure consisting of several distinct elements. Since these errors occur in the same subtests with both bright and dull children it would appear that in such perceptual situations as are presented in our tests certain elements are prepotent, as it were, and attract attention, thus diverting the cognitive energy from the apprehension of the whole situation.

(b) Constitutive relations† are displaced by other relations in the eductive process. Thus superficial likenesses are often educed in the place of constitutive relations. Similarly, conjunctive relations‡ often displace constitutive relations in the eductive process. Thus, enumeration of elements or mere apprehension of their spatial contiguity is substituted—"absolute" cognition displaces "relative" cognition, to use Spearman's terms cited above, for the apprehension of elements in their mutual relatedness. A particular form of this displacement occurred frequently in FV. In this test the change represented in a subtest is always *cumulative*: every stage represents an advance upon the previous stage—i.e., the previous stage plus an increment of change. One of the commonest errors was the substitution of an additive relation for the constitutive (cumulative) one in the cognitive process. Thus the figures selected show not the different successive stages of (cumulative) change, but the different parts of the end-stage which, if added together, produce the end figure. This displacement appeared to occur more readily with younger or duller subjects than with older or brighter subjects.‡ (See Example 3.)

* Similar perceptual operations are reported by F. C. Bartlett, *Brit. Jnl. Psychol.*, VIII, 1916, pp. 222-266.

† See Spearman, *The Nature of "Intelligence," etc.*, p. 71-72. Conjunctive relations are typically present in arithmetical operations like addition; whereas constitutive relations exist, e.g., between the side of a square and the whole square.

‡ It would be rash to compare this finding with results obtained in altogether different fields of research, but it is of interest to recollect, in this connection, the views of Stern (*Psychology of Early Childhood*), and Piaget (*Language and Thought of the Child*), that children think "syncretistically."



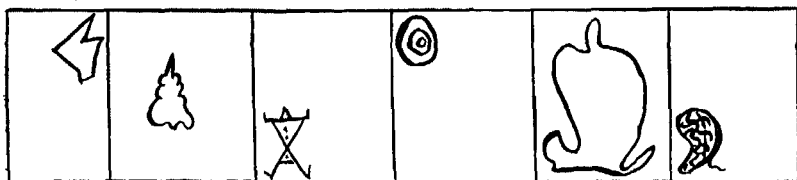
EXAMPLE No. 3.

TEST FV.

Illustrating *displacement* of cumulative by additive relations. The correct sequence is (beginning) 3, 4, 9 (end), each step adding cumulatively to the previous one. Subject's choice is (beginning) 2, 5, 9 (end); or (beginning) 3, 6, 8 (end); thus reaching the end stage by the superimposition, or the conjunctive addition, of the selected figures.

Another form of relational displacement was met with in subtests of higher orders of complexity. In these, education on the basis of first order relations often displaced education at higher relational levels.

(c) Another frequent type of displacement error was that in which the shape or outline of a figure was made the criterion of education, instead of the apprehension of the entire figure as a relational whole. This prepotency of shape seems to depend more upon what may be described as the insistency or obviousness of the shape than upon the difficulty of cognizing the relations constituting the whole. (See Example 4.)



EXAMPLE No. 4.

TEST FIII.

Illustrating pre-potency of shape. Correct choices are positions 3 and 6, which belong together best of all as representing the same relation of figure to ground. Subject chooses 1 and 2, since both "are pointed and have a similar shape."

Another form of this error occurred in subtests where it was necessary to apprehend a figure in relation to its background. Here the shape of the figure, or its spatial demarcation from the "field" seems to have prepotency. The subject fails to apprehend the relation between figure and ground, his attention being directed entirely to the figure.*

(d) Displacement of the critical relation in an educative process by a contingent experience occurred occasionally in FI and FV. E.g., a subject would select several of the "test" figures in a subtest of FI correctly, and then another "test" figure because of its resemblance in shape to one of the already selected "test" figures.†

(e) A number of errors, especially in FI, seemed to be due to a confluence effect in the perception of the given figures. The "given" figures, by mutual influence, give rise to a vague concept of shape and "test" figures are selected which seem to fit this concept.

(c) ERRORS DUE TO MULTIPLE CAUSATION.

While we have thus distinguished two broad categories of errors, those due to erroneous processes, and those due to erroneous criteria, it is necessary to point out that a great many errors arise from a combination of causes. Thus many of the subsumptive errors ensue because of a preceding displacement of cognition (cf. Example 2, p. 313). Many of these more complex errors cannot easily be analyzed. The evidence obtained from the introspections of our adult subjects indicates, however, that the factors isolated in the foregoing pages are operative in these errors too.

XII.—CONCLUSIONS.

It will be seen that the theory of cognitive error put forward by Spearman, when amplified in the direction of Selz's theory, covers our empirical analysis of the errors found in the F tests completely. At the same time, our analysis implies a distribution of emphasis somewhat different from that of Spearman. He stresses the principle of retentivity, and hence reproduction, as the main source of cognitive error. For the kind of perceptual situation presented in our tests we would, with Selz, stress displacement as a source of error of equal or greater effect.

Several more recondite theoretical problems arise out of our analysis of error. In the first place, why does subsumption or displacement

* Cf. the figure-ground phenomenon which has received so much attention from the *gestalt* psychologists, whose views and findings are discussed in B. Petermann's *The Gestalt Theory*, 1932.

† Lindworsky, *op. cit.*, reports similar observations with verbal material.

occur at all? We may safely conjecture that the indeterminate cognition of the total perceptual situation is the antecedent condition for their occurrence. But is this a purely cognitive phenomenon, a problem of mental span or of the distribution of attention; or is it a conative phenomenon, a problem of the maintenance of a mental set or of volitional control of the cognitive exploration of a situation? These are questions which our data do not enable us to answer.* It may be conjectured that reproduction is resorted to in perceptual situations which are capable of evoking associative reproduction when, for conative or cognitive reasons, the subject fails to apprehend the relations constituting the situation. It would thus be a sort of regression to a more primitive level of coping with cognitive situations—an hypothesis which gains some support from Strasheim's† finding that dull children tend to fall back upon reproduction in dilemmas. The prior condition for displacement, on the other hand, would perhaps be the faulty direction of the cognitive energy, due in part to the structure of the perceptual situation and in part to the subject's attitude. These matters remain for further investigation.

XIII.—SUMMARY.

(1) Cognitive error, the converse of accurate cognition, has received scant attention from psychologists, in spite of its obvious importance in the study of cognition.

(2) Three of the theories which have been proposed in explanation of cognitive error are here examined. Spearman's theory is the most comprehensive, and lays the main stress upon the rôle of retentivity in error. Selz attributes error to the displacement of a normal thought process. Wilcocks' theory is derived from Müller and Pilzecker, and considers error to be due to wrong thought processes initiated by reproductive association.

(3) In the present paper an analysis is undertaken of the errors made by children in a perceptual test of "g." Tabulations of the errors prove that the types of errors occurring in a particular cognitive situation do not depend upon degree of intelligence, but upon the qualitative conditions governing cognition; i.e., error is consistent at all "g" levels.

* F. Aveling, *Directing Mental Energy*, stresses the importance of conative and volitional factors in cognitive activities. See also E. H. Wild, *Brit. Journ. Psychol.*, XVIII, 1927-8, pp. 147-167, 332-353.

† J. Strasheim, *A New Method of Mental Testing*. *Educ. Psychol. Monog. Series*, Warwick and Yorke, 1926.

(4) Qualitative analysis leads to a division of the types of errors into two main classes, those due to erroneous processes and those due to erroneous criteria, and a subsidiary class of errors due to a multiplicity of factors. These classes overlap to some extent.

(5) The results obtained point to a composite explanation of error synthesizing the above-mentioned theories, but with the main emphasis on displacement rather than reproduction.

(6) Attention is drawn to the need for further investigation of the antecedent conditions of error, which may be of conative or volitional nature.

RÉSUMÉ.

UNE ÉTUDE DES ERREURS DE COGNITION.

L'étude des erreurs de cognition, bien que trop souvent négligée, peut jeter beaucoup de lumière sur les processus normaux de la cognition. Dans cet article on examine, en rapport avec trois explications théoriques de l'erreur, les erreurs commises par des élèves dans un test d'intelligence perceptif.

Les résultats démontrent que les types d'erreur, qui se manifestent dans une situation donnée de cognition, sont identiques pour les bons élèves et pour les mauvais. Les erreurs se divisent en deux catégories principales, celles qui proviennent de processus intellectuels déplacés et celles dues à des critères faux. Une théorie synthétique de l'erreur, appuyant surtout sur le déplacement de la cognition, comprendrait tous les types d'erreur rencontrés. On suggère que la cause fondamentale de l'erreur serait à chercher plutôt dans le désir ou dans la volonté.

ÜBERSICHT.

EIN STUDIUM DER FEHLER BEIM ERKENNEN.

Das Studium der Fehler beim Erkennen, das bisher sehr vernachlässigt worden ist, kann viel dazu beitragen, den normalen Verlauf des Erkennens zu erklären. In dieser Abhandlung werden die Fehler, die von Schulkindern bei einer Intelligenzprüfung des Verstehens gemacht worden sind, in Verbindung mit drei theoretischen Erklärungen der Fehler, die aufgestellt worden sind, untersucht. Die Ergebnisse zeigen, dass die Fehlertypen, die in einer gegebenen Lage des Erkennens auftreten können, für gescheite und dumme Kinder die gleichen sind. Es gibt zwei Hauptarten von Fehlern; solche, die auf unrichtigen geistigen Vorgängen und solche, die auf falschen Kennzeichen beruhen. Eine synthetische Theorie der Fehler welche den Nachdruck auf eine Verschiebung des Verstehens legt, würde alle Arten von Fehlern, denen man begegnet, einschliessen. Es wird angedeutet, dass die tiefste Ursache möglicherweise auf ein Begehren oder Wollen zurückgeführt werden kann.

THE PSYCHOLOGY OF MODERN LANGUAGE LEARNING.

By J. J. FINDLAY.

(An Address at the Harrow Conference of Junior Public Schoolmasters,
January, 1932.)

- I.—*The invitation.*
- II.—*The nature of language : a function of experience.*
- III.—*The resistance of the vernacular.*
- IV.—*Language, when alive, portrays a situation.*
- V.—*The search for reality.*
- VI.—*The play's the thing.*
- VII.—*Imitation without variation.*
- VIII.—*Can the vernacular be excluded ?*
- IX.—*The right pace of speed essential to rhythm.*
- X.—*The rôle of the unconscious.*
- XI.—*After the first year.*

THE title of this address is chosen advisedly. No discussion of teaching is sound unless it is based upon the behaviour of the learner: nothing that I offer you this morning will, I trust, deviate from that bedrock principle. I shall lay down concisely a series of conclusions based upon observations (extending over many years) of reactions between the learner and his material (in this case the foreign language which he is invited to learn).

I.—THE INVITATION.

We “*invite*” our pupils to spend their time on French or German, i.e., we assume that they display motives which will induce them to throw their energies into this pursuit. Any time after ten years of age a lad knows that foreign peoples exist who are in many ways like his own people, but differ in appearance, customs and above all in language. His first reaction to such foreigners may be to bully them, to compel them to drop these foreign habits and become like himself. Sheer animal appetites for power or instincts of fear induce such tendencies. The Philistine, even if he goes so far as to make out what the foreigner means, gets the words translated into his vernacular; he refuses to grasp the foreigner's mind by entering into *his* mode of thought.

But sometimes the opposite reaction is witnessed—the reaction of an intelligent being, curious to understand the foreigner's behaviour ; of a sympathetic being prepared to enjoy, even to love, this stranger ; the reaction, in short, of the scholar and the gentleman. Now my experience is that most boys are ready to approach modern languages in this second mode of reaction, *if we invite them to do so.*

Unfortunately, our whole tradition has run counter to these expanding generous impulses. That tradition must be thrown aside in a spirit of thorough repentance if our boys' energies are to be evoked as real learners. I find that boys (and men also, most of them but overgrown boys !) desire to love their neighbour, desire, i.e., to apply the Golden Rule to the case of the foreigner, and I therefore base my invitation on that assumption.

You will of course not misunderstand me : I do not ask my boys to cease being Britishers because they are now invited to expand their sympathies beyond our national bounds : by no means ; I may be international without professing the creed of the cosmopolitan ; I can be a patriot without being a Chauvinist. I am a better Englishman, indeed, if I have learned to "love" also the Frenchman and the Hindoo. So much for the moral aspects of our problem ; it is fundamental ; it is the basis of all else. If your diagnosis of the situation dissents from mine we shall waste our time to argue further. I offer French to the learner because I believe that that nation, at its best, displays virtues which are worth the learner's while to partake ; and he, ready to expand, will jump at the offer.

II.—THE NATURE OF LANGUAGE : A FUNCTION OF EXPERIENCE.

A foreign people offers much to us in addition to its language : its art, its history, its music, its system of morals. Some of these can be appreciated even though their language is a closed book. The artists indeed get much nearer the truth than the linguists, probably because they trust their eyes, their hands and their ears, rather than their prejudices. (In the 'Eighties I learnt more sound psychology from Reynolds' *Discourses on Art* than from most other English exponents of pedagogics at that date.) But language differs from all the rest in being very arbitrary, and at the same time very specific. As a scheme of conventional arbitrary signs it is repellent to the stranger when he first hears it uttered or written. We can quickly appreciate a picture painted in Budapest, a quartette from Rome, even the drawings of the bushman or the negro convey meaning : but any foreign language at the first approach is meaningless jargon.

It is this central phenomenon which has always been the stumbling block in the way of success in teaching. But the fact that this gateway into the mind of the foreigner is so formidable does not lessen the need to secure an entrance. His language is the most intimate expression of his life, just as *our* language, *our* vernacular, is the most intimate, peculiar expression of *our* life. We offer French lessons to our boys rather than lessons in French art or in French music because we know that this gateway, formidable as it is, affords the principal road by which we get at the Frenchman's mind. Any language system is an immensely complicated structure of usages acquired by the native on the margin of consciousness without reflection or effort, as a practical art. The foreigner has to copy the behaviour of this native by conscious attention, practising again and again, establishing a multitude of new habits, all of them contrary to the stream of his own vernacular habits.

III.—THE RESISTANCE OF THE VERNACULAR.

This last point is urgent enough to demand a clause to itself. When Reynolds sent his pupils to Venice to copy a Titian they could adapt their hands and eyes to this exercise without being greatly disturbed by their previous occupation with English models: they would not "translate" the lines of their Italian master into the modes followed on the Thames. For the time being they forgot their English masters, and practised new habits, slavishly reproducing the behaviour of Titian. Granted the willing mind, the student found no difficulty in doing as he was told. But in language the strength of our mother tongue is overwhelming, and in consequence the efforts of the teacher tend to be defeated: hence all the orthodox teachers, until the period of Vietor and Passy, accepted this defeat; many of them in fact still glory in it; pupils and teacher together are only happy when they have dropped the strange words and can once more employ the homely vernacular.

Clearly this feature is of capital importance. The "Direct Methodists" to whom I have referred brought it fully to the notice of the teaching profession, but they were ill-equipped in psychology and much of their zeal was in consequence misspent. Without labelling ourselves by this or any other title let us set down the facts of science as witnessed in human behaviour. The obvious facts here are two:

- (1) Since our vernacular is intimately bound up with our whole system of habits in thought and in feeling, the first tendency when any foreign expression is presented to us is to transpose it into our vernacular system.

- (2) Since the purpose of learning these foreign expressions is to get at home with them *as the specific art of the foreign people* we must grasp them *apart from our vernacular* and establish a new set of habits.

All the investigations, alike of psychologists and physiologists during the last half-century, confirm the view that the establishment of a separate centre of function for every new language is the immediate purpose which the learner must achieve. In other words, the negative achievement is to overcome the resistance of the vernacular. (*En passant* let us comfort ourselves by noting that a second or third language can be faced more easily when once the habit of dispensing with the vernacular has been established in our traffic with the first.)

IV.—LANGUAGE, WHEN ALIVE, PORTRAYS A SITUATION, AN ACTUAL EXPERIENCE.

This negative purpose takes a positive direction when we realize the difference between the academic dissection of language into items (such as those of sound, or of vocabulary or accidence) and the synthetic use of language to express meaning. I have every respect for my university colleagues, who from the days of the Greeks have treated a language as a library pursuit; their point of view is the same as that of the professor of pure mathematics to whom the serviceable use of his researches is anathema. The gulf between such a scholar and a plain man like myself, to whom the forms of language are means to an end, is profound and cannot be bridged by any compromise.

From the very first day the philologist (or his disciples who flood our schools as modern language masters) offers a "Course" of instruction absolutely opposed to the observations of behaviour that I have set down above. They isolate a minute scrap of language, a sound, a noun, a present tense, and invite the learner to attend to that. They may make some concession to our infant minds and provide pictures, exclaiming: "Voici le père; voilà la mère!" Their purpose all the while is to focus the attention of the learner on certain verbal forms or sounds, not on the behaviour of the man or woman who uses the words. They, in fact, have issued an invitation quite other than that which I have suggested in Clause 1. They beg the beginner to confine his energies to what *they* call language learning, assuring him that some day he will come to the enjoyment of actual French behaviour, if only he will submit for a few years or months to their scholarly guidance. Sometimes they offer what

is called a compromise as in a well-known "Compromise Course" (as if a compromise is possible between a hansom and a taxi !)

In the diagnosis I make of these proceedings such exercises are like the Hortus Siccus of the Botanist, dead specimens : an advanced scholar may learn much from them ; the beginner's progress is just blocked. For language does not exist in verbal form but in *situations*, in experience ; hence if our invitation to the feast is genuine we shall from the very first lesson present situations and our pupils will enter into these situations.

V.—THE SEARCH FOR REALITY, FOR "SITUATIONS."

A great step forward was made some thirty years ago when the slogan "The Reader as Centre" was announced. The teacher said in effect to his pupil, "I will sweeten this medicine with jam : you will have an anecdote, an episode, a real bit of French ; this we will read, and as soon as possible we will base our grammar upon it and drop it in order to tackle the stern problems of grammar and composition." But this concession has not given us much relief, and the average schoolmaster still holds that real situations can only be encountered when the learner is taken across the water and faces the foreigner on *his* native heath. A public school head master recently took up this position at the Head Masters' Conference. His boys, so he told us, learn "Moo-cow French" at school for five years or so ; thereafter they are encouraged to go to France for six months and acquire real French in real situations. I am sure that this standpoint does not represent the faith or the practice of the younger public schoolmasters, but it does give a fair account of what many teachers, and many parents also, are content with even in the year 1932.

Now it was only a few years ago that I myself realized the true psychology of this problem. I will not detain you by an autobiography of the steps by which I made the discovery. The outcome was very practical, for it led to the prolonged visits I made first to Paris and last year to Berlin, for the production of the books and gramophone records.* No man can take an objective view of his own work, but I venture to think that these productions are the most valuable contribution to research that I have been privileged to make since I was advanced from the schoolmaster's desk to the professor's chair. For the Eureka of which I was in search was precisely this need : for situations which would call forth all the learner's energy and enable him to acquire language forms partly on the margin of consciousness, while acquiring much else.

* Do I need to apologise for calling attention to my own productions ? I think not, for otherwise I am only beating the air.

VI.—THE PLAY'S THE THING.

I submit to you that life has always two aspects, the imaged life and the daily routine life. Drama is enacted elsewhere than in the theatre ; we are always willing to play. We cannot take our pupils to Paris, so as to encounter the routine behaviour of French people, but we can bring to them from Paris a bit of French behaviour, a little scene, and our scholars can witness this, copy it, play at it. Thus they find in a play a perfect situation for imbibing, not merely language forms but all that speech and book stand for when they spring direct out of the action, the laughter and tears, of the foreign people.

Now when I had reached this point I realized that I was reverting to the practice of old-time schoolmasters* in the days when Latin was a living speech, before psychology was dreamed of, before the Reformation brought Nationalism in its train, and therewith condemned the beginner to learn the ancient tongue through his vernacular instead of going straight to the fountainhead. He acted his Terence, declaimed his Cicero, recited his Virgil, feeling in his tongue and throat what the Roman felt. These ancient authors handled situations, some dramatic, some narrative, but always alive, always picturing to the learner the ends sought by real human folk, whose language was only a means *to* those ends. I was reverting to Erasmus who wrote charming Latin dialogues to be learned and acted by the boys of St. Paul's. Those who are attracted by the historical rather than the scientific aspect of our problem may seek to discover why Europe followed the example of Roger Ascham rather than of Erasmus. Answering the enquiry at one sweep I assert dogmatically that from that day to this Europe on the whole has not *wanted* to learn foreign languages.

VII.—IMITATION WITHOUT VARIATION.

When the play is before you on the Record and in the book the method is absurdly simple—you just copy. Language in a way is the most mechanical of the arts ; it is all convention, rigid custom ; only poets are allowed to break the rules. Hence our critics complain that we appeal only to memory, to parrot memory ; and I plead guilty, merely premising that parrots learn what suits parrots and my pupils learn what suits men. Give me a worthy model and that suffices. For in all the arts, fine arts and useful arts alike, the first stage in mastery is discipleship,

* Vide *The Drama in English Schools*, a comprehensive record of what went on in Grammar and other schools from 1300 onwards.

fidelity.* The child's eyes, ears, limbs, are all alive with desire to reproduce from models. And we teachers? Alas, misled by a false psychology, bolstered up by false pride in our calling, we have thought that our task was to argue, to reason, to thrust in science so-called, whereas skill in performance was the first demand.

Hence for the early months I am content to let the learner enjoy the reproduction of scenes designed to give him the real thing; giving him, if you please, not only a pleasing situation but correct habits of accent, pronunciation, intonation, of spelling and writing; giving him what we call his STOCK on which hereafter he can draw when the time comes for him to use his new language for expression, for variation, for exchange of ideas with the natives. If you ask me how soon should such variation be attempted I reply that there is no hard and fast rule, any more than a physician can lay down an exact time-table for a patient recovering from a prolonged illness: he watches for the signs, and we teachers watch for evidence that our pupils are ready to launch out in the use of their stock†. The psychology of these processes constitutes a new chapter for which we have no time this morning; the problem they raise will be answered once more by observation of phenomena.

VIII.—CAN THE VERNACULAR BE EXCLUDED?

During the last two years I myself and a few friends have been helping learners to start French and German on the above principles and we have gained some experience. We find a striking difference between children and adults. The child is very happy copying the behaviour of the characters in our little scenes: he is a fine mimic and he abides with full content on the level of the sensuous.

A group of half a dozen boys pick up from the teacher and from the gramophone a very fair reproduction of all they witness; but they are sometimes content to dispense with the meaning! They are like the inferior type of actor who will learn to mouth Hamlet in the style of Henry Irving with no real grasp of what Shakespeare meant. Now obviously this will not do: our learners must "know what they are talking about" although they need not secure a word for word rendering in their vernacular. The adult learner is more critical and insists on knowing what it all means before he consents to learn his part.

* Compare the present writer's *Principles of Class Teaching*, Chap. XV.

† If space permitted I could quote evidence of such behaviour reported from earners.

How then are we to provide meaning to these sounds and signs? Our young learner sings with great gusto "Dormez vous," "Sonnez les matines," and it doesn't matter much to him what "Dormez," "Sonnez" stand for. Somehow we must put this right, and the Direct Methodists with the best of goodwill cannot help us much. My artist drew me a charming picture of Frère Jaques asleep, of the monastery bell, but pictures and actions do not carry a long way. I can hold an object in my hand and say "Das ist eine Bleistift," but your boy while repeating my announcement comments to himself "He means a pencil."

The plain fact is that the vernacular is always lying in wait to assert itself. As we have seen, it is this resistance of the vernacular which has constituted for centuries the chief obstacle to reform. It is through the vernacular that the ordinary learner first images the meaning of what he hears or reads. In other words he does a great deal of cross-reference, of translation, even though the Direct Methodist may design to stop that hole, to suppress this route towards meaning.

How then do we get out of the impasse? Are we to accept defeat, to allow our pupil to establish the translation habit, to let French, for example, be felt and grasped in the homely terms of the mother tongue? Obviously not if we keep our eyes on the ball, on the goal we have set before us. We have only one resource, but this is adequate: we take the pupil into our confidence: we reason with him: we show him, as indeed the very first lesson with the gramophone shows, that the mind *can* keep the two languages apart: and that his immediate goal in learning the language is to get so used to it that he *can* repeat the sentences *without* conscious attention to the meaning in English, just as the speakers do on the records. Our pupils at ten and upwards are quite capable of grasping this element in the situation and of entering into it with intelligent zeal.

Thereupon we supply them with what I call a Parallel Text.* At the first glance resort to a translation in the vernacular seems to run counter to the very process we have been advocating. And so it will prove to be unless the learner consciously controls his behaviour and uses the translation solely as a temporary instrument, a means whereby the

* Such a text has just been issued for *Deutsche Jugend*, to which I have attached a preface expounding this position further. Once more may I point out that we are reverting to very old custom. Caxton's Press produced a book of French and English parallel passages in 1483, based on MSS. which had been in use for at least 150 years (see Lumbley: *The French Language in England*; Manchester University Press, 1920). Lumbley shows how well French was acquired at the only period in English culture when the English really wanted to learn it, viz., between 1660 and 1760. The leading philosopher, Locke, and the most respected statesman, Clarendon, were united in supporting the theses which are here offered for your consideration.

original becomes intelligible. For example, we have a song about a hunter riding through a greenwood ; a picture shows him to us, but as the picture is not coloured we are glad to know that *durch dem grünen Wald* means *through the greenwood* ; we also secure a fairly definite meaning to the preposition *aus* attached to the geographical name *Kurpfalz*. To that extent our vernacular structure of epithets and particles has links with the German structure which our pupil is slowly building up in his mind-body. But these links are not in the focus of attention. The learner is not absorbed in relations between *durch* and *through*, between *aus* and *out of* : (if he were he would actually be learning bad German !) He gets a collective idea of a German phrase, an idea suffused with a feeling for colour, for movement on horseback through a wood, etc. And he thereafter sings these words with an adequate sense of meaning. The single words, *durch*, *aus*, *grün*, are not lost : they will turn up again in other connections and will gradually, after frequent use in such connections, become established as familiar friends : the idea behind each of them cannot be exactly represented by any term in our vernacular, and as regards the preposition any such premature association would be a hindrance. The process therefore is analogous to means which are paralleled by acquirement of skill in other arts : the coach at golf, e.g., tells the beginner to keep his eye on the ball—i.e., to make a conscious effort to attend what ultimately will not require effort at all. For the moment we ask the learner to notice that *Wald* means in our vernacular *forest* : for the future we intend him to let that verbal association sink below the threshold ; his feelings and images will enter a German forest which is quite different to an English wood (as everyone knows who has tramped or ridden *unter den Bäumen eines schönen Waldes*).

This intention will, however, only be effective if both teacher and pupil exercise the right volition—whether in golf or in language learning. In golf it is more easy to acquire the new habit because the resistance to be encountered is slight, but it is felt by the learner : many a man learning golf (or cricket for that matter) never acquires such a mastery of his attention as to see the ball with his eyes, and at the same time attend to a further end, viz., the direction the ball will take. The learner in all these cases is concerned with patterns or structures. In the course of establishing such an independent structure many links, temporary or permanent, with other structures are created. The essential matter is to realize *our end in view*, viz., a structure which is not merely linguistic, but essential bound up with the culture, history, geography, art, pleasures, ideals of the German people ; this and nothing less is what we mean by “learning German,” even in the first week of study : a Parallel Text is

not a contrariant means, but must be subordinated to the lively emotional interest in the situation for which words and pictures are instruments.

IX.—THE RIGHT PACE OF SPEED IS ESSENTIAL TO RHYTHM.

One factor in this assimilation of a foreign situation is the time factor. All events happen in time ; the ratio between handling a piece of consecutive thought and putting out its expression in a series of words is not fixed, but it varies within ascertainable limits. If I repeat what I have just said as follows you will see my point : All.....eventshappen.....in.....time. We must, therefore, aid our pupil in grasping the whole of a situation ; we prevent him from dwelling on isolated words by throwing at him, right away at the start, a complete sentence—in fact, more than one. Here we can deal with one of the resentful criticisms made by some teachers against these records—they say that the pace is far too fast, that at the start the foreigner must hear the speech very slowly. Some indeed refuse to let the beginner hear even a complete word ; they simply utter isolated sounds at him ! The remedy is easy to provide. The teacher repeats the speeches from the gramophone at a slow pace, the slowest pace consistent with reality, with social exchange. To go slower is to forfeit the actuality of the situation, to go faster is to stumble in accent and pronunciation. You may say, why did I not insist upon my actors in Paris going at this slow speed ? I deliberately refused to interfere with them beyond a general admonition such as they get when practising to act on a stage. I desired them, above all, to be their natural selves, *les enfants de Paris* : It is for the beginner who copies them to slow down the pace when he makes his first attempt.*

X.—THE RÔLE OF THE UNCONSCIOUS.

As we have seen some of the principles above expounded are reversions to old customs. I wish in conclusion to strengthen the case for this reversion by appeal to what is called the New Psychology. For more than a century educational reformers have tended to distrust all plans which made much of memory ; our children must observe, must handle, must reason, but they must not be called upon to repeat, verbatim, the terms in which thought and feeling have been expressed. Much folly was witnessed in the bad old days when children were set to memorize nonsense;

* Compare *A Note on Rhythm*, contributed by the present writer to *Modern Languages*, December, 1931.

hence the reformers have gone to the other extreme and protested that they should not be compelled to learn anything by heart. Because our grandfathers wasted their time on learning useless tables, we are not to ask boys to learn Homer or Isaiah by heart.

But surely current psychology is by no means on the side of such reformers. Habit is unconscious memory: the habits acquired by the repeated (and again repeated) forms in which happy speech is expressed transfer from the conscious, attentive efforts of the learner, to the subconscious store on which he will draw with surety at a future date. What he learned with fidelity will be later summoned up to play once more a conscious part. This final aspect of language acquirement would demand a full hour to itself and I must leave it just as a hint for your meditation.

XI.—AFTER THE FIRST YEAR.

The arguments of these ten paragraphs apply most directly to the beginnings of language learning: this may be unfortunate since many of you in this conference care most for teaching the sixth forms. It is always difficult to interest ambitious scholars in the early steps by which young people are introduced to a new sphere of science or of art. To myself the early processes of learning have always been of absorbing interest and I wish I could persuade a few young schoolmasters to pursue to a further stage the investigations on which I am engaged. If, however, you have no immediate interest in the first year and would like me to tell you what should be done in subsequent years I can reply in general terms that sixth form boys are in essence the same as third form boys: they also are human, however much they have been shaped to an academic mould: they also desire situations where language is alive, where a real Frenchman, be he a Napoleon, a Maréchal Foch, a Briand, or a Molière stand for experiences, for events: they also must learn by heart, must act the part with feeling such as attracts the sixth form boy: and if in the third and fourth forms you have taught him to enjoy this supreme art of utterance you will have your reward in later years. Neglect the foundations and your superstructure can only tumble about your ears.

What I have put before you this morning amounts to a veritable revolution. There can be *no compromise*: no playing about with premature exercises and scraps of accident. Those pedantries which at present fill the school text-books are to my mind huge barriers blocking the way to any living contact with the foreigner's mind, the devices of clever pedagogues who confuse means with ends. We need have no

quarrel with the Examining Boards and their tests : a boy who has been imbibing real French for some two years can readily face up to the easy passages of translation and re-translation set before him by Certificate Boards.

In conclusion, persons who are curious about names and titles sometimes ask me for a name to apply to the method here described. It seems that no teacher can advance to a new platform without being labelled as if he were a patent medicine : we have Gouin, Dalton, Montessori, Project Methods. Must I also not bear a label, if only for the purposes of identification? Someone labelled me as advocating The Dramatic Method, but this is incorrect, since plays are only one of the art forms in which a live situation can be portrayed. If you insist on a label for a method no doubt the word " Situation " would fit as well as any.* But I would like to urge that we imitate the physicians in this matter, that in our search for truth we be content to stand, unlabelled, unticketed.

* While correcting this proof I am reading Alan Gardiner : *Theory of Speech and Language*, just published. It encourages me greatly to find that he also has hit upon " Situation " as the right scientific term. His whole treatment confirms the principles on which the above article is based. I am all the more pleased because his exposition has no relation to our problem : he confines himself to the vernacular, but his theory of *function, purpose, form* supports everything I have set out in the above paragraphs.

RÉSUMÉ.

LA PSYCHOLOGIE DE L'ÉTUDE DES LANGUES MODERNES.

Supposé que l'étudiant désire, dans une humeur aimable, comprendre l'étranger, on peut facilement l'amener à contracter des habitudes d'acquisition par lesquelles il arrive à comprendre la langue de l'étranger sans avoir recours à la langue maternelle. Il " joue " le comportement de l'étranger en employant des disques de phonographe et un livre de classe qui contiennent des scènes, courtes mais vraisemblables : il joue, celles-ci en les apprenant *memoriter* fidèlement. Après avoir passé quelques mois à acquérir ce fonds, il peut, sans danger, avancer à méditer sur la structure grammaticale et à faire des compositions. La traduction est une épreuve utile d'examen mais non pas une méthode d'apprendre. Les adhérents de la Méthode Directe ont échoué parce qu'ils n'ont pas suffisamment approfondi l'étude de la psychologie de l'habileté et de la technique nécessaire pour vaincre la résistance de la langue maternelle. Les professeurs ne peuvent aider les étudiants que quand ils sont prêts à observer ces phénomènes, tels qu'ils existent.

ÜBERSICHT.

DIE PSYCHOLOGIE DER ERLERNUNG DER MODERNEN SPRACHEN.

Angenommen, dass der Lernende sich bemüht, den Ausländer zu verstehen, kann man ihn leicht dazu bringen, eine Methode anzunehmen, durch die er den Sinn der fremden Sprache erfasst, ohne seine Muttersprache zu Hilfe zu nehmen. Er „spielt“ den Ausländer, indem er Grammophonplatten und Textbuch benutzt, wo kurze aber unverfälschte Szenen gegeben werden: diese „spielt“ er, indem er sie wortgetreu auswendig lernt. Nachdem er sich das während einiger Monate zu eigen gemacht hat, kann er ohne Bedenken zur Betrachtung der grammatischen, Struktur und des Aufbaus übergehen. Übersetzen ist ein nützliches Prüfungsmittel aber keine Lernmethode. Die Anhänger der Direkten Methode hatten keinen Erfolg, weil sie nicht tief genug eindringen in die Psychologie der Fertigkeiten und der Technik, die nötig sind, um den Widerstand der Muttersprache zu überwinden. Lehrer können Lernenden nur helfen, wenn sie bereit sind, diese Erscheinungen tatsächlich zu beachten.

THE MEASUREMENT OF PERSPECTIVE IN THE GEOGRAPHICAL OUTLOOK OF SECONDARY SCHOOL PUPILS.

By E. J. G. BRADFORD.

- I.—*The meaning of the term geographical perspective.*
- II.—*The problem.*
- III.—*The subjects and the tests.*
- IV.—*The statistical treatment of the data.*
- V.—*Results from the first series of tests.*
- VI.—*Results from the second series of tests.*
- VII.—*Sex differences.*
- VIII.—*Conclusions.*

Appendix I.—*Variation in possible values of K.*

II.—*The probable error of K.*

I.—THE MEANING OF THE TERM "GEOGRAPHICAL PERSPECTIVE."

A SCHOOL curriculum scientifically balanced so as to provide an intellectual discipline of varied character can only be achieved when it is based upon clear conceptions as to the mode of thinking characteristic of each subject of study. Educationists groping towards such an ideal have up to the present only vaguely recognized differences to which they apply verbal labels such as the historical sense, mathematical precision, appreciation of drama or music, the scientific attitude, the geographical view-point.

It seems not altogether unreasonable to assume that the geographical view should incorporate an arrangement of phenomena in some sort of perspective. This investigation is an attempt to define this perspective and examine its development among pupils during the secondary school course of geographical study.

Subjects of the scientific type that are studied in school may be regarded as bodies of facts and systems of relationships between those facts. These relationships vary in type according to the subject. Thus in geometry the relationship is predominantly logical, in chemistry mainly functional, while in geography it is purely associative or contingent.

Geographical relationships can hardly be regarded as logical in the narrower sense. The syllogistic form cannot be adopted effectively because the major premise is never definite in quantity.

For example what can be deduced about a hypothetical locality X from the three major premises given below?

- (1) Greater elevation is usually associated with lower temperature.
X is at a considerable elevation.
Therefore X is probably cool.
- (2) In tropical latitudes temperatures are usually high.
X is in a tropical latitude.
Therefore X probably has high temperatures.
- (3) Localities adjoining the sea coast usually have equable temperatures.
X is near the sea coast.
Therefore X probably has neither very high nor very low temperatures.

Given that the locality X is 16°S. and 6°W. can any accurate conclusions be deduced about its summer and winter temperatures from the above major premises?

Explanations in geometry become series of logical deductions from postulates or from relationships previously deduced. These explanations are designated proofs. Explanations in chemistry take the form of deducing results from the observed functional properties of the substances concerned. These explanations are epitomized in equations. Geographical explanation, however, only refers the problem presented in a particular locality to those phenomena which are distributed in gradations over the surface of the globe. Carried beyond this point the explanation changes in character and becomes, for example, economic, botanical, or physical.

Thus the density of population at Q is *explained* by reference to the distribution of altitudes, temperatures, precipitation, etc. The density of population at R is explained in a similar manner. The difference in density of population between Q and R is explained by reference to the different gradations of the same distributed phenomena.

In the school study of geography the distributions of phenomena are noted and memorized. The tendency for the gradation of one phenomenon to be associated with a particular gradation of another phenomenon is then noted. Particular groupings of these different gradations are located in definite areas of the world's surface. To these areas the name *region* is given.

The locality Q is appreciated in proper *perspective* when a knowledge of its location will fix its position on the scale of gradations of any of the phenomena, the world distribution of which has been studied. The relative importance or the relative position in perspective of two localities Q and R will depend upon their both being placed accurately on the scale of gradation of the phenomena under consideration. To view things in geographical perspective is to perceive them against a world background of phenomena distributed in gradations. The world relationship gives them geographical significance.

An attempt to represent geographical perspective diagrammatically is made below. In line 1 the letter V for Valdivia is placed near the maximum because it is one of the most distant towns. In line 6 the letter m is placed near the maximum because Mexico City is one of the larger towns. Suez is one of the driest towns so the letter S is put near to the minimum limit in line 5.

THE RELATIONSHIP OF SUEZ, MEXICO CITY, AND VALDIVIA, EXPRESSED IN SIX SERIES OF GRADATIONS.

| <i>World Phenomenon.</i> | <i>Minimum Limit.</i> | | <i>Maximum Limit.</i> |
|--------------------------|-----------------------|-------------------------------------|-----------------------|
| (1) Distance | Own locality.... | S m V | Antipodes |
| (2) Latitude | Equator | m S V | Poles |
| (3) Summer heat | 30°F..... | Vm S | 90°F. |
| (4) Elevation | Sea Level | SV m | 12,000 feet |
| (5) Rainfall | Nil | S m V | 150 inches |
| (6) Population | Nil | SV m | Millions |

III.—THE SUBJECTS AND THE TESTS.

The first series of tests were applied to representative classes in secondary schools. Test A was given to 833 pupils drawn from four schools. Test paper B was given to 649 pupils drawn from two of these four schools, a boys' school and a girls' school. Test paper C was given to 549 pupils in the other two schools, a boys' school and a girls' school. The pupils tested in these four schools included 50 per cent of the secondary school population of a large industrial town. The schools were filled entirely by pupils who had gained a free place through examination,

The second series of tests was applied to classes in three schools, a girls' school and two mixed schools, all of them within twenty miles of the schools taking the first series. The pupils tested in these three schools numbered 406, they all did the revised tests A, B, and C. The revision consisted of reducing the groups of words in test A from 15 to 10, and the number of names to be ranked in tests B and C from 12 to 10 in each test. Two classes in a small London Grammar School were also tested. The four schools taking the revised tests differed from the schools taking the first series in that they were not entirely filled with scholars who had gained a free place by examination.

The tests are given below in their revised form. They have been curtailed in order to enable the full series to be applied in the space of one hour. The character of the revision can be seen by comparing the names in Tables II to VI with those in the tests that follow :

TEST A.

Each of the following groups of three words is to be used in making one sentence. Under each set of words write the sentence in which you have included them. *The word " and " must not be used in any sentence.* For example :

- (a) Soil. Crops. Pasture.

The *soil* of this part is better suited to *pasture* than to the growing of crops.

- (b) Forests. Evaporation. Temperature.

The *temperature* is so high that the resulting *evaporation* renders the growth of *forests* impossible.

- (1) Warehouse. Dock. Products.
- (2) Tide. Port. Trade.
- (3) Routes. Railway Centre. Continental.
- (4) Grasslands. Limestone. Porous.
- (5) Minerals. Climate. Output.
- (6) Hinterland. Communication. Population.
- (7) Exports. Maritime. Civilized.
- (8) Industrial. Waterpower. Commodities.
- (9) Rocks. Drainage. Impervious.
- (10) Environment. Savannah. Pastoral.

TEST B.

1.—What is the shortest distance from the town in which you live to each of the following places? Imagine that you could fly direct by aeroplane. Do not give the distance in miles, but just put the figure (1) after the nearest; figure (2) after the next, and so on; figure (10) will come after the place which is farthest away. *Make a guess at those about which you are not certain.*

Capetown () Jerusalem () Vancouver () Cape Horn ()
 Montreal () Tasmania () Gibraltar () Berlin ()
 Pekin () Ceylon ()

2.—The names of ten towns are given below, place the figure (1) against the largest, i.e., the one with most people living in it, the figure (2) against the next largest, and so on; figure (10) will be put up against the smallest. *Make a guess at those about which you are not certain.*

Genoa () Chicago () Colombo (*Ceylon*) () Paris ()
 Melbourne () Winnipeg () Buenos Aires () Suez ()
 Capetown () Dover ()

3.—The latitude and longitude of ten places are given below. Write down against each, first the continent and second the country in which you think the place is situated, e.g., 7°S. 110°E. Asia. Java.

| <i>Lat.</i> <i>in degrees.</i> | <i>Long.</i> | <i>Continent.</i> | <i>Country.</i> | <i>Lat.</i> <i>in degrees.</i> | <i>Long.</i> | <i>Continent.</i> | <i>Country.</i> |
|-----------------------------------|--------------|-------------------|-----------------|-----------------------------------|--------------|-------------------|-----------------|
| 55 N. | 7 W. | | | 15 S. | 50 W. | | |
| 40 N. | 90 W. | | | 23 N. | 90 E. | | |
| 5 S. | 25 E. | | | 20 N. | 100 W. | | |
| 55 N. | 75 E. | | | 30 S. | 120 E. | | |
| 20 N. | 155 W. | | | 20 N. | 5 W. | | |

TEST C.

1.—After the following names of places put a figure in to show which have the warmer and which have the cooler summers. The place which has the greatest average temperature for the hottest summer month will be placed first, a number (1) will be placed after its name; figure (2)

will be placed after the next hottest, and so on ; figure (10) will be placed against the coolest. *Make a guess at those about which you are not certain.* All these places are near the coast, or not far inland.

Bergen (Norway) () Freetown (Sierra Leone) () Paris ()
 Mogador (W. Morocco) () Walvisch Bay (S.W. Africa) () York ()
 Mouth of Congo R. () Oporto (Portugal) () Capetown ()
 Cape Frio (Portuguese W. Africa) ()

2.—In a similar way put the following places in order according to the average amount of rain which each has in the year. Place the figure (1) after the place which has most ; the figure (2) after the one with the next heaviest rainfall ; and figure (10) after that with least rainfall. *Make a guess at those about which you are not certain.*

London () Bombay () Bergen () Capetown ()
 Cairo () Singapore () Buenos Aires () Winnipeg ()
 Tokio () Madrid ()

3.—The following places A, B, C, etc., are all near the sea coast on the west of their respective continents. You are given the latitude of each place. Put a figure (1) opposite the place which you think will have the hottest summer ; figure (2) against the next and so on to (10) the coolest. *Make a guess at those about which you are not certain.*

A. 34 S. () B. 60 N. () C. $22\frac{1}{2}$ S. () D. 54 N. ()
 E. $31\frac{1}{2}$ N. () F. 1 S. () G. $8\frac{1}{2}$ N. () H. 18 S. ()
 I. 41 N. () J. $48\frac{1}{2}$ N. ()

The figures given above are degrees of latitude.

Test A.—Time allowed : 20 minutes, not including the time taken by the tester in reading the question and examples aloud.

Test B3.—Time allowed : 10 minutes, not including the time taken by the tester in reading the question and example aloud.

Tests B1, B2, and C.—Time allowed : 5 minutes each, not including the time taken by the tester in reading the question aloud. Half a minute before the five minutes have elapsed, the tester repeats the instruction to "make a guess at" those which have not been filled in.

The method of marking Test A was as follows. Three marks were given for a sentence which showed conclusively that the writer fully understood the meaning of the three terms included in that sentence. No

marks were given for a sentence which included the word "and" or its equivalent, or which disclosed definitely that one term was misunderstood. Two marks were credited to the writer of a sentence of such a character that it was a little doubtful whether or not he had a clear understanding of all three terms, e.g., The trade of the port depends on the tide. One mark was credited to a writer of a sentence of very doubtful value, e.g., The routes of the continental railway centre are few. Of the positive marks awarded it was found that one fifth were ones, one fifth were twos, and three fifth were threes.

Test B3 was marked according to the following scheme :

| <i>Location.</i> | <i>Continent.</i> | <i>Country.</i> | |
|------------------|--------------------------------|-----------------------------|--|
| | <i>1 mark.</i> | <i>2 marks.</i> | <i>1 mark.</i> |
| 55 N. 7 W. | Europe. | Ireland. | England, Scotland, Wales. |
| 40 N. 90 W. .. | North America. | U.S.A. | — |
| 5 S. 25 E. .. | Africa. | Congo, Uganda, B.E. Africa. | Rhodesia. |
| 55 N. 75 E. .. | Asia | Siberia, Russia. | (Europe and Russia). |
| 20 N. 155 W. .. | Australasia, Oceania, Pacific. | Hawaii, Friendly Island. | Samoa. |
| 15 S. 50 W. .. | South America. | Brazil. | North Argentina, Uruguay. |
| 23 N. 90 E. .. | Asia. | India, Assam. | Indo China, Burma, Ceylon. |
| 40 S. 175 W. .. | Australasia. | New Zealand. | |
| 66 N. 145 W. .. | North America. | Alaska, Yukon. | B. Columbia. |
| 20 N. 100 W. .. | North America. .. | Mexico. | West Indies, Cuba, Texas, Central America. |
| 30 S. 120 E. .. | Australasia. | Western Australia. | North-West Province. |
| 20 N. 5 W. .. | Africa. | Nigeria. Near Sahara | Morocco, Guinea, Algiers, Gold Coast |

Credit was given for "America" only if the country following made it clear that the writer knew whether it was North or South America.

The tests other than A and B3 are "group" tests in a special sense ; they are intended to measure the degree of knowledge of the group and not the knowledge of the individual pupil. As they are intended to measure the geographical perspective it is necessary that the localities selected should exhibit various gradations from the minimum to the maximum, and that those localities should be graded in equal quantitative steps, but at the same time the places should be well known. It is impossible to fulfil all three conditions. A scale from minimum to maximum range can be easily constructed from fairly well-known localities, but equal steps cannot be obtained. After all, geography has not yet reached, and probably never will reach, such a stage of development in definition that, for example, the steps between Equatorial, Tropical, Mediterranean and North Temperate types of climate will be equal as regards summer temperatures or seasonal variations. It is admitted, however, that in the statistical treatment the steps have been taken as being equal. As the conclusions are based on general trends observed among the coefficients, and not on individual values, they are unlikely to be invalidated by this assumption.

IV.—THE STATISTICAL TREATMENT OF DATA.

In order to be able conveniently to compare the distribution of ranks awarded by one group of pupils with the distributions of ranks awarded by other groups, these distributions have been expressed as single coefficients, by means of two formulæ.

Consider the following hypothetical distributions of frequencies of ranks awarded (by one hundred persons) to one place name in a list of ten place names. Assume that the problem is to place these ten places in order according to the height of the locality above sea level, the highest being ranked as first, the lowest as tenth.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------|----|----|----|----|-----|----|----|----|----|----|
| A | | | | | 100 | | | | | |
| B | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| C | | | | 33 | 34 | 33 | | | | |
| D | 1 | 4 | 12 | 20 | 26 | 20 | 12 | 4 | 1 | 0 |

Distribution A represents a group of persons every member of which knows the true position of the place in the scale of altitudes. Distribution C represents a group in which most of the individuals have an absolutely or approximately accurate idea of the relative elevation of the locality. Distribution D represents a group the members of which vary greatly in the accuracy with which they can rank the named place.

The knowledge or relative accuracy of ranking by the group, as a group, can be obtained by comparing the distribution expected on the basis of pure chance, i.e., distribution B, with that actually obtained, say C or D. Thus,

$$K = 1 - \frac{A.D.x}{A.D.c}$$

where K is the coefficient of knowledge or accuracy of ranking: A.D.x is the average deviation of rankings calculated from the correct rank (assumed to be 5 in the hypothetical distributions above): A.D.c is the average deviation of frequencies due to chance calculated also from rank 5. The values of K for the distributions C and D above are .73 and .52 respectively.

Some distributions may show a very high frequency for a rank which is not the correct one. If the average deviation of rankings from the mode of the distribution be compared with the average deviation of a chance distribution from that same rank, the following formula will give a measure of uniformity of opinion.

$$U = 1 - \frac{A.D.m}{A.D.c}$$

where A.D.m is the average deviation from the mode.

The difference (E in Tables II to VI) between the values of K and U calculated for any one distribution will be a measure of the common error prevailing among the individuals comprising the group tested. The position of the mode will give the direction of the error. Where U has been calculated from an obviously unreliable mode, the resulting value of E is without any real significance and is placed between brackets in the following tables.

A measure of general geographical perspective is given by the average of all the values of K. The perspective in regard to any one distributed

geographical phenomenon is measured by the average K obtained from the test relevant to that phenomenon.

The probable error of K is given by the following formula,

$$\text{P.E.} = \frac{.45}{\sqrt{n}}$$

V.—THE RESULTS FROM THE FIRST SERIES OF TESTS.

The schools were tested within a month of the completion of the school year, thus the average scores given below represent the knowledge of the children after one, two, three, and four years of study in secondary schools. The ages of these children are respectively about 13, 14, 15, and 16 years. The fifth year pupils are a group of pupils who failed to matriculate in their fourth year and were recapitulating their fourth year course. The numbers in the tables are percentage marks in the case of tests A and B3, or K expressed as a percentage in the case of the other tests.

TABLE I.

| | 1st year. | 2nd year. | 3rd year. | 4th year. | 5th year. |
|----------------------------|--------------|--------------|--------------|--------------|--------------|
| Test A.1 Vocabulary..... | 27 | 34 | 40 | 53 | |
| Test B.1. Distance | 51 | 52 | 58 | 60 | 68 |
| B.2. Population | 36 | 34 | 37 | 34 | 37 |
| B.3. Location | 25 | 22 | 29 | 34 | 40 |
| Test C.1. Temp. Names | 50 | 54 | 52 | 54 | |
| C.2. Rainfall | 11 | 17 | 22 | 24 | |
| C.3. Temp. Latitude.... | 78 | 74 | 75 | 74 | |
| Average for all tests..... | 40 | 41 | 45 | 48 | |

The most striking features of this table are the very low values obtained, and the general lack of progress. Only in regard to the manipulation of the geographical vocabulary is there any marked improvement shown. In connection with the phenomena treated in the other geographical tests, geographical perspective seems to be almost non-existent for the majority of pupils even at the end of their school course.

TABLE II.
TEST B1. DISTANCE.

| | Year | K. | U. | E. | D. | | Year | K. | U. | E. | D. |
|----------------|------|-----|-----|----|----|---------------|------|----|----|----|----|
| Inverness | 4 | 100 | 100 | | | Vancouver .. | 4 | 32 | 48 | 16 | + |
| Berlin | 4 | 95 | 95 | | | | 3 | 28 | 47 | 19 | + |
| | | | | | | | 2 | 25 | 44 | 19 | + |
| | | | | | | | 1 | 21 | 40 | 19 | + |
| Gibraltar | 4 | 82 | 82 | | | Pekin..... | 4 | 35 | 52 | 17 | + |
| Moscow | 4 | 55 | 55 | | | | 3 | 28 | 55 | 27 | + |
| Ceylon | 4 | 60 | 60 | | | | 2 | 34 | 40 | 6 | + |
| | | | | | | | 1 | 34 | 50 | 19 | + |
| Jerusalem .. | 4 | 50 | 50 | | | Capetown | 4 | 35 | 52 | 17 | — |
| Montreal | 4 | 46 | 48 | 2 | + | | 3 | 32 | 47 | 15 | — |
| | | | | | | | 2 | 35 | 45 | 10 | — |
| Tasmania | 4 | 84 | 84 | | | | 1 | 20 | 37 | 17 | — |
| | | | | | | Cape Horn .. | 4 | 50 | 48 | 8 | — |
| | | | | | | | 3 | 49 | 52 | 3 | — |
| | | | | | | | 2 | 53 | 53 | | |
| | | | | | | | 1 | 53 | 53 | | |

The low values of K in Table II are due to lack of uniformity, that is, to ignorance rather than to error or distortion. Such distortion as exists might be ascribed to the familiarity of the pupil with the Mercator map of the world. On this map, a straight line drawn from London to Vancouver or Pekin is longer than a line drawn from London to Capetown. The + sign in column D indicates that the mode of the distribution, from which the value of U was calculated, was at a rank which showed that the distance had been exaggerated. The — sign in column D after Capetown shows that the distance was thought to be less than it actually is.

TABLE III.
TEST B2. POPULATION.

| | Year | K. | U. | E. | D. | | Year | K. | U. | E. | D. |
|----------------|------|----|----|-----|----|---------------|------|----|----|----|----|
| Paris | 4 | 71 | 71 | | | Colombo | 4 | 00 | 65 | 65 | — |
| Chicago | 4 | 79 | 79 | | | | 3 | 04 | 57 | 53 | — |
| | | | | | | | 2 | 08 | 55 | 47 | — |
| Buenos Aires . | 4 | 32 | 30 | (2) | — | | 1 | 18 | 40 | 22 | — |
| Pekin..... | 4 | 25 | 23 | (2) | — | Winnipeg | 4 | 04 | 30 | 34 | + |
| Melbourne .. | 4 | 48 | 45 | (3) | + | | 3 | 03 | 40 | 37 | + |
| | | | | | | | 2 | 00 | 33 | 33 | + |
| Suez | 4 | 40 | 49 | 9 | + | | 1 | 03 | 30 | 27 | + |
| Genoa | 4 | 06 | 38 | 32 | — | Kimberley .. | 4 | 29 | 48 | 19 | + |
| | 3 | 09 | 40 | 31 | — | | 3 | 51 | 62 | 11 | — |
| | 2 | 18 | 29 | 11 | — | | 2 | 55 | 56 | 1 | + |
| | 1 | 19 | 30 | 11 | — | | 1 | 61 | 61 | | |

On the whole the low values of K in Table III are due to lack of uniformity or to ignorance rather than to distortion or error. The size of towns in the British Empire tends to be exaggerated. Colombo is an exception, that may arise from its association with a series of small coaling stations on the route to the East, e.g., Gibraltar, Malta, Suez, and Aden.

TABLE IV.
TEST C1. TEMPERATURE.

| | Year | K. | U. | E. | D. | | Year | K. | U. | E | D. |
|--------------|------|----|----|-----|----|----------------|------|-----|----|-----|----|
| Freetown .. | 4 | 55 | 66 | 9 | — | Capetown | 4 | 35 | 34 | (1) | + |
| | 3 | 57 | 57 | | | | 3 | 30 | 38 | 8 | + |
| | 2 | 68 | 68 | | | | 2 | 33 | 42 | 9 | + |
| | 1 | 63 | 63 | | | | 1 | 26 | 31 | 5 | + |
| Congo | 4 | 75 | 86 | 9 | + | Paris | 4 | 71 | 86 | 15 | — |
| | 3 | 74 | 77 | 3 | + | | 3 | 65 | 85 | 20 | — |
| | 2 | 68 | 70 | 2 | + | | 2 | 65 | 80 | 15 | — |
| | 1 | 71 | 68 | (3) | + | | 1 | 66 | 85 | 19 | — |
| Cape Frio .. | 4 | 72 | 72 | | | Walfisch Bay . | 4 | —33 | 62 | 95 | + |
| | 3 | 67 | 67 | | | | 3 | —42 | 64 | 106 | + |
| | 2 | 66 | 61 | (5) | — | | 2 | —34 | 55 | 89 | + |
| | 1 | 64 | 64 | | | | 1 | —44 | 45 | 99 | + |
| Cadiz | 4 | 27 | 61 | 34 | — | York | 4 | 92 | 92 | | |
| | 3 | 27 | 57 | 30 | — | | 3 | 89 | 89 | | |
| | 2 | 31 | 52 | 21 | — | | 2 | 87 | 87 | | |
| | 1 | 31 | 53 | 22 | — | | 1 | 84 | 84 | | |
| Mogador | 4 | 47 | 67 | 20 | — | Bergen | 4 | 82 | 95 | 13 | — |
| | 3 | 53 | 53 | | | | 3 | 79 | 95 | 16 | — |
| | 2 | 56 | 56 | | | | 2 | 79 | 93 | 15 | — |
| | 1 | 44 | 44 | | | | 1 | 64 | 92 | 28 | — |
| Oporto | 4 | 48 | 55 | 7 | — | Aberdeen | 4 | 85 | 89 | 4 | + |
| | 3 | 47 | 56 | 9 | — | | 3 | 80 | 94 | 14 | + |
| | 2 | 47 | 57 | 10 | — | | 2 | 81 | 94 | 13 | + |
| | 1 | 51 | 65 | 14 | — | | 1 | 79 | 91 | 12 | + |

The degree of ignorance shown in Table IV is very much less than that shown in the two previous tables. The effect of the cold current which skirts the south-west coast of Africa is not realized, even though the existence of the current be a fact known to the pupils. The error shown in regard to Bergen and Aberdeen is due to the fact that the pupils did not know that local conditions give Bergen a warmer summer than Aberdeen. One could not expect this to be known, hence the error cannot be regarded as being important.

TABLE V.
TEST C2. RAINFALL.

| | Year | K. | U. | E. | D. | | Year | K. | U. | E. | D. |
|----------------|------|-----|----|-----|----|---------------|------|----|----|------|----|
| Singapore | 4 | 33 | 33 | | | London | 4 | 29 | 16 | (13) | — |
| Bombay | 4 | 51 | 51 | | | Capetown | 4 | 07 | 21 | 14 | + |
| Bergen | 4 | —17 | 15 | 32 | — | Mexico | 4 | 04 | 07 | 3 | — |
| Tokio | 4 | 16 | 31 | 15 | — | Winnipeg | 4 | 18 | 20 | 2 | + |
| Jamaica | 4 | 28 | 28 | | | Madrid | 4 | 31 | 28 | (3) | — |
| Buenos Aires . | 4 | 26 | 25 | (1) | + | Cairo | 4 | 63 | 63 | | |

The values throughout Table V are so very low that it is doubtful if the errors shown have much significance. There is so very little uniformity that the modes of the distributions do not signify any central tendency, the result is that the average deviation calculated from the mode chosen is often greater than that calculated from the correct rank. According to Brunhes* "the map of water and the map of men" are "basal to all geographical human facts." The lack of perspective in this particular must therefore be considered as rather serious.

* *Human Geography*, p. 67.

TABLE VI.
TEST C3. TEMPERATURE.

| | Year | K. | U. | E. | D. | | Year | K. | U. | E. | D. |
|-----------------|------|----|----|----|----|-----------------|------|----|----|----|----|
| Lat. 31½ N. ... | 4 | 57 | 81 | 24 | — | Lat. 33½ N. ... | 4 | 63 | 83 | 20 | — |
| | 3 | 63 | 86 | 23 | — | | 3 | 57 | 79 | 22 | — |
| | 2 | 61 | 84 | 23 | — | | 2 | 59 | 79 | 20 | — |
| | 1 | 65 | 90 | 25 | — | | 1 | 65 | 90 | 25 | — |
| Lat. 8½ N. | 4 | 75 | 89 | 14 | — | Lat. 1 S. | 4 | 50 | 87 | 37 | + |
| | 3 | 76 | 91 | 15 | — | | 3 | 50 | 96 | 46 | + |
| | 2 | 75 | 96 | 21 | — | | 2 | 50 | 85 | 35 | + |
| | 1 | 81 | 92 | 11 | — | | 1 | 50 | 89 | 39 | + |
| Lat. 18 S. | 4 | 85 | 85 | | | Lat. 22½ S. ... | 4 | 23 | 79 | 56 | + |
| | | | | | | | 3 | 30 | 86 | 56 | + |
| Lat. 34 N. | 4 | 82 | 82 | | | | 2 | 25 | 82 | 57 | + |
| | | | | | | | 1 | 27 | 89 | 62 | + |
| Lat. 41 N. | 4 | 87 | 87 | | | Lat. 54 N. | 4 | 97 | 97 | | |
| Lat. 48½ N. ... | 4 | 85 | 85 | | | Lat. 57 N. | 4 | 92 | 92 | | |
| Lat. 60 N. | 4 | 95 | 95 | | | | | | | | |

The coefficient of uniformity is very high throughout Table VI because the pupils realize that summer temperature varies closely with distance from the equator. The lower values of K are very largely due to two errors. The pupils do not realize that the maximum summer temperatures are experienced not at the equator but to the north of it. Also the effect of the cold current is not realized. Comparison with Table IV would lead one to suppose that if the approximate latitude of the towns had been known then the temperatures would have been inferred more accurately. Ignorance of location means that the general principle cannot be applied to particular cases.

TABLE VII.
FREQUENCY OF MARKS GAINED IN TEST B3.

| Marks (max. 36) .. | 0-2 | 3-5 | 6-8 | 9-11 | 12-14 | 15-17 | 18-20 | 21-23 | Over 24 |
|--------------------|-----|-----|-----|------|-------|-------|-------|-------|------------|
| Fourth Year | 1 | 9 | 17 | 21 | 21 | 12 | 13 | 2 | 4 |
| Third Year | 8 | 29 | 32 | 19 | 28 | 17 | 7 | 10 | 1 |
| Second Year | 30 | 40 | 39 | 32 | 20 | 9 | 11 | 2 | 0 |
| First Year | 18 | 27 | 34 | 39 | 33 | 13 | 7 | 1 | 1 |

Table VII shows what a considerable overlap there is between the scores of the different years. The scores generally are very low, twelve marks could have been gained if the pupils had known the continent within which the intersections of the latitudes and longitudes given were to be found. Only 54 per cent of the fourth year pupils reach this low standard of twelve marks. The same standard is reached by 42 per cent of the third year pupils, by 23 per cent of the second year pupils, and by nearly 32 per cent of the first year pupils. The knowledge of the immediate locality of, say, a town, is of little help in acquiring a true perspective. To know that Capetown is in the extreme south-west of Africa or that Buenos Aires is situated on the La Plata estuary in South America, is of little use for comparative purposes or for general inferences. For example, one cannot estimate the climate of either place from this information nor yet the relative distance from, say, the port of Southampton. Africa and South America are not suitable as references because they do not bear any definite relationship to one another or to the larger world. Latitude and longitude nets have the advantage of definiteness and of serviceability for general reference and hence they should be regarded as a useful

instrument in the teaching of a systematic geography in school, and not as an extra amount of information to be acquired.

VI.—RESULTS FROM THE SECOND (REVISED) SERIES.

These tests were given to the third and fourth-year classes in a small grammar school for boys (School X in Table VIII). The fourth year class consisted of seventeen pupils and the third-year class of twenty-nine. The comparison of the results is the more interesting because the fourth-year class subsequently sat for the School Leaving Certificate examination conducted by the University of London and gained eight distinctions in geography. The scores obtained by both classes are uniformly better than the means obtained from the other seven schools.

TABLE VIII.

| | <i>Test A.*</i> | | <i>Test B.3.*</i> | | <i>Test B.1.</i> | | <i>Test B.2.</i> | | <i>Test C.1.</i> | | <i>Test C.2.</i> | | <i>Test C.3.</i> | |
|--------------|-----------------|----|-------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|
| Year . . . | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 |
| Mean Score | 53 | 40 | 34 | 29 | 60 | 58 | 34 | 37 | 54 | 52 | 24 | 22 | 74 | 75 |
| School X.. | 58 | 50 | 63 | 37 | 73 | 68 | 45 | 45 | 64 | 48 | 55 | 44 | 77 | 74 |
| Difference . | 5 | 10 | 29 | 8 | 13 | 10 | 11 | 8 | 10 | -4 | 31 | 22 | 3 | -1 |

* Percentage marks. Other figures are percentage values of K.

The tests were applied by the class teacher who is a trained psychologist. The fourth-year class excels in perspective, especially in the two fundamentals, location and the distribution of rainfall. It is probably safe to infer from the test scores that the command of language was not the basis of their excellent examination results, but rather their more accurate perspective or their greater fund of geographical information. The test scores also suggest that if geography teachers definitely aimed at giving the pupils an accurate perspective a higher standard of attainment might be obtained after four years of geographical study in a secondary school. Thus, although the tests are really diagnostic in character they will furnish norms for gauging class progress and attainments.

The summary of results obtained from three other schools, given in Table IX, shows that the mean score for the whole battery of tests remains fairly constant from school to school; also that in one school the (*a*) classes of each year gain higher mean scores than the (*b*) classes, and the (*b*) classes than the (*c*).

The fact that in School P the boys' class in the second year shows up considerably better than the corresponding class of girls, suggests that girls generally may not succeed as well as boys in developing geographical perspective. The difference applies however more especially to Tests A and B3, which do not measure this perspective.

TABLE IX.

| <i>Year of School Course.</i> | <i>Number of Pupils.</i> | <i>A.*</i> | <i>B.1.</i> | <i>B.2.</i> | <i>B.3*</i> | <i>C.1.</i> | <i>C.2.</i> | <i>C.3.</i> | <i>Mean.</i> |
|-------------------------------|--------------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| SCHOOL Rg. (GIRLS). | | | | | | | | | |
| 4 | 38 | 44 | 44 | 36 | 28 | 41 | 22 | 69 | 41 |
| 3 | 60 | 37 | 37 | 24 | 18 | 35 | 11 | 63 | 32 |
| SCHOOL P. (MIXED). | | | | | | | | | |
| 4 | 18 | 51 | 50 | 34 | 32 | 53 | 06 | 69 | 42 |
| 3 | 16 | 38 | 36 | 37 | 19 | 42 | 25 | 66 | 39 |
| 2 (girls) | 27 | 39 | 30 | 36 | 17 | 39 | 10 | 59 | 33 |
| 2 (boys) | 22 | 53 | 49 | 27 | 28 | 37 | 22 | 75 | 42 |
| SCHOOL W. (MIXED). | | | | | | | | | |
| 4 (a) | 24 | 56 | 50 | 41 | 27 | 53 | 28 | 78 | 48 |
| 4 (b) | 19 | 43 | 51 | 30 | 27 | 57 | 16 | 69 | 42 |
| 4 (c) | 16 | 44 | 47 | 30 | 20 | 47 | 16 | 55 | 37 |
| 3 (a) | 24 | 47 | 55 | 39 | 31 | 53 | 21 | 71 | 45 |
| 3 (b) | 26 | 36 | 41 | 26 | 20 | 32 | 19 | 62 | 34 |
| 2 (a) | 25 | 43 | 45 | 13 | 22 | 46 | 20 | 74 | 38 |
| 2 (b) | 25 | 34 | 31 | 22 | 16 | 43 | 02 | 76 | 32 |
| 1 (a) | 21 | 34 | 35 | 34 | 19 | 42 | 04 | 75 | 35 |
| 1 (b) | 21 | 35 | 40 | 25 | 14 | 42 | 05 | 73 | 33 |
| 1 (c) | 24 | 21 | 25 | 13 | 9 | 33 | 10 | 44 | 22 |

VII.—SEX DIFFERENCES.

The possible sex difference suggested by the scores of the two second-year classes in School P appears as a probable difference when the boys' and girls' test scores in the other school are averaged separately. The mean scores of the girls and boys in Tests A and B3 are given in Table X.

TABLE X.

| <i>Test.</i> | <i>School.</i> | <i>4th year.</i> | | <i>3rd year.</i> | | <i>2nd year.</i> | | <i>1st year.</i> | |
|---------------|----------------|------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|
| | | <i>Boys.</i> | <i>Girls.</i> | <i>Boys.</i> | <i>Girls.</i> | <i>Boys.</i> | <i>Girls.</i> | <i>Boys.</i> | <i>Girls.</i> |
| A | Rg. | — | 44 | — | 28 | — | — | — | — |
| | P. | 66 | 35 | 52 | 18 | 53 | 39 | — | — |
| | W. | 52 | 46 | 46 | 30 | 42 | 36 | 33 | 25 |
| B.3 | Rg. | — | 28 | — | 18 | — | — | — | — |
| | P. | 42 | 22 | 25 | 12 | 36 | 17 | — | — |
| | W. | 36 | 21 | 29 | 14 | 20 | 18 | 16 | 10 |

In Schools P and W, girls and boys were taught by the same teacher, yet they show a decided difference in regard to their ability to control geographical terminology (Test A) and to localize places (Test B3). It appears that there is a definite sex difference here. Girls normally have greater linguistic fluency than boys, yet in Test A they cannot hold their own with the boys. Probably this is because the test measures the power of integrating concepts rather than the power of manipulating mere words, it is a test of ideas rather than a test of language, a test of knowledge rather than a test of information. This difference in Test A is due in part to the same cause as the difference in Test B3. There is a tendency to think of definite localities when answering Test A. If these places are not clearly localized there is likelihood of the sentences constructed being inaccurate. In fact the ability to localize—to visualize the map—is involved in the thinking processes when answering most, if not all, of the tests.

VIII.—CONCLUSIONS.

(1) There is a slow and meagre development of geographical perspective during four years of schooling, which is shown by a general increase in the average value of K (the group measure of perspective) from the first to the fourth years. (Table I.)

(2) Geographical perspective varies with general scholastic ability. The (a) divisions give higher values of K than the (b) or (c) divisions of the same year. (Table IX.)

(3) Geographical perspective varies with sex. Girls taught with boys in a mixed school by the same teacher, a man, gain a lower value of K than the boys. The girls' school results are lower than those from the mixed schools. (Table IX.)

(4) The sex difference applies also to the command of geographical terminology. (Table X.)

(5) Geographical perspective is probably affected by methods of teaching, e.g., School X. It is at least doubtful if the different values of K gained by the third-year classes, collected together below, can be entirely attributed to sex and intelligence.

TESTS.

| | B.1. | B.2. | C.1. | C.2. | C.3. |
|------------------------|------|------|------|------|------|
| School Rg. Girls | 37 | 24 | 35 | 11 | 63 |
| School P. Mixed | 36 | 37 | 42 | 25 | 66 |
| School W. Mixed | 48 | 33 | 43 | 20 | 67 |
| School X. Boys | 68 | 45 | 48 | 44 | 74 |

(6) Perspective is weakest in the two branches of study which are considered of fundamental importance to explanations in human geography viz., location and annual precipitation.

(7) The common errors show the same direction in all four years, so that they cannot be justly ascribed to the incompleteness of the geography course covered by the pupils in the first, second, and third years.

(8) The integration of geographical information in the mind of the secondary school pupil appears to be rather haphazard. Possibly it is due to the method of study that it thereby loses much of its intellectual value.

The study of geography in school has, however, another important value. It provides an appropriate medium for developing sympathies among the peoples of the world. This sympathetic influence may have extremely important social and political consequences. Such sympathies would conceivably be more effective if supported by an intellectual grip of the subject matter that is born of a clearer perspective.

APPENDIX I.

VARIATIONS OF POSSIBLE VALUES OF K WITH RANK.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------|---|---|---|---|----|----|-----|-----|-----|-----|-----|-----|
| A | 0 | 1 | 3 | 7 | 12 | 17 | 20* | 17 | 12 | 7 | 3 | 1 |
| B | 0 | 0 | 1 | 3 | 7 | 12 | 17 | 20* | 17 | 12 | 7 | 4 |
| C | 0 | 0 | 0 | 1 | 3 | 7 | 12 | 17 | 20* | 17 | 12 | 11 |
| D | 0 | 0 | 0 | 0 | 1 | 3 | 7 | 12 | 17 | 20* | 17 | 23 |
| E | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 7 | 12 | 17 | 20* | 40 |
| F | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 7 | 12 | 17 | 60* |

* Frequency of true rank assumed.

Assume that distribution A in the above table represents the variations of opinion among one hundred persons for a place name whose true rank should be 7. This same distribution of opinion cannot be represented as being apparently normal when the true rank moves towards either limit. The limitation of ranks results in a heaping up of the frequencies on one side of the mean, as in distributions B to F above.

Since it may be questioned whether actual distributions are affected in this way by the limitation of the number of ranks, the average value of *K* for each rank in all five tests has been calculated and the results are given below. The values of *K* from the above hypothetical distributions are also given. It will be seen that the hypothetical and actual values vary concomitantly except for ranks 4 and 9.

VARIATION IN MEAN VALUES OF *K* FOR EACH RANK.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Fourth Year .. | 67 | 70 | 51 | 36 | 47 | 30 | 36 | 39 | 28 | 61 | 57 | 73 |
| Third Year | 66 | 65 | 55 | 37 | 46 | 32 | 32 | 39 | 28 | 54 | 63 | 70 |
| Second Year .. | 65 | 59 | 50 | 33 | 39 | 28 | 32 | 42 | 24 | 55 | 63 | 64 |
| First Year | 67 | 59 | 45 | 35 | 39 | 28 | 35 | 42 | 21 | 50 | 59 | 55 |
| Mean..... | 66 | 63 | 50 | 38 | 43 | 29 | 34 | 40 | 25 | 55 | 60 | 65 |
| Hypothetical .. | 88 | 79 | 70 | 64 | 53 | 50 | 50 | 53 | 64 | 70 | 79 | 88 |

COMPARISON OF ACTUAL AND HYPOTHETICAL VALUES.

| Mean of Ranks | 1+12 | 2+11 | 3+10 | 4+9 | 5+8 | 6+7 |
|--------------------|------|------|------|------|------|------|
| Actual | 65.5 | 62.0 | 52.5 | 31.5 | 41.5 | 31.5 |
| Hypothetical | 88.0 | 79.0 | 70.0 | 64.0 | 53.0 | 50.0 |
| Ratio A/H | .75 | .79 | .75 | .50 | .79 | .70 |

The discrepancy between the actual and hypothetical values for the combined ranks 4 and 9 is due in part to the very low (negative) values of *K* obtained from Test C2. In part it is also probably due to the fact that these two ranks are at the point where the attention would be weakest, about seven-tenths of the way through the list reading backwards or forwards. In learning series of nonsense syllables the weakest links are usually found to be about seven-tenths of the way through the list.

APPENDIX II.

I am indebted to P. J. Daniell, Esq., M.A., Sc.D., for the theoretical deduction of the formula for the P.E. of the value of K given below.

If $\phi = \text{expression} \left[1 - \frac{\text{Mean Variation of actual distribution}}{\text{Mean Variation of equal distribution}} \right]$

then the *standard* error $\sigma(\phi)$ in ϕ is given by

$$N\sigma^2 = \frac{q \sum_{s=1}^q (r-s)^2}{\left\{ \sum_{s=1}^q (r-s) \right\}^2} - 1 = \frac{1}{2} k^2(r) \text{ say}$$

where q = the number of ranks.

$$\text{Probable error in } \phi = \frac{.477}{\sqrt{N}} k(r)$$

when $q = 10$

k has a maximum value = 1.05

k has a minimum value = .832

k has an average value approximately .95

$$\text{thence P.E. of } \phi = \frac{.45}{\sqrt{N}}$$

RÉSUMÉ.

LE MESURAGE DE LA PERSPECTIVE DANS LES CONNAISSANCES EN GÉOGRAPHIE DES ÉLÈVES DES ÉCOLES SECONDAIRES.

C'est la capacité de situer une région spéciale dans un ensemble de phénomènes gradués, tels la pluie annuelle, la température, la densité de la population, qui constitue l'organisation des faits particulière à la géographie, et qui donne à l'explication géographique son caractère spécifique.

L'application de tests destinés à mesurer cette capacité de placer une région dans les catégories appropriées de tels phénomènes (la perspective géographique) montra (a) que les élèves font très peu de progrès pendant quatre ans d'études et (b) que les garçons obtiennent dans les tests plus de points que les filles.

Un test fondé sur une façon alternative d'organisation, au moyen de termes géographiques, (par exemple, drainage, transport, intérieur) montra (a) qu'il y a une amélioration marquée entre la première année et la quatrième, et (b) que les filles obtiennent moins de points que les garçons.

On suggère que l'étude de la géographie a perdu la plus grande partie de sa valeur intellectuelle, si, après quatre ans, les élèves doivent encore fonder leur raisonnement sur des données indéterminées.

ÜBERSICHT.MESSUNG DER PERSPEKTIVE IN DER AUFFASSUNG DER
GEOGRAPHIE BEI SCHÜLERN IN DEN HÖHEREN SCHULEN.

Die Methode der Ergänzung von Tatsachen, die eine Eigenschaft der Geographie ist, und die der Geographie ihr charakteristisches Kennzeichen verleiht, ist die Zuteilung eines besonderen Ortes einem Hintergrund von abgestuften Erscheinungen wie Regenmenge, Temperatur, oder Dichtigkeit der Bevölkerung.

Die Anwendung von Tests, die bestimmt waren, die Fähigkeit, einen Ort den angemessenen Stufen derartiger Erscheinungen (in der geeigneten Umgebung) zuzuteilen, wies darauf hin, dass (a) während vierjährigen Studiums Schüler sehr wenige Fortschritte machen, und dass (b) in den Tests Knaben bessere Ergebnisse aufweisen als Mädchen.

Ein Test, dem eine alternative Methode der Ergänzung, zugrunde lag mittels geographischer Ausdrücke (z. B. Trockenlegung des Bodens, Transport, Hinterland) zeigte dass (a) unverkennbare Fortschritte zwischen dem ersten und dem vierten Jahr vorkommen und dass (b) Mädchen nicht so viel leisten wie Knaben.

Es wird angedeutet, dass das Studium der Geographie viel von seinem geistigen Wert verloren hat, wenn die Schüler nach vier Jahren ihre Urteile auf eine unbestimmte Perspektive gründen müssen.

THE RELIABILITY OF EXAMINATIONS: AN ENQUIRY.

By C. W. VALENTINE, M.A., D.Phil., with the collaboration of W. G. EMMETT, M.A. (University of London Press, 1932. Pp. 196. 7s. 6d.)

SIR PHILIP HARTOG, as he relates in a well-known lecture, once asked an experienced friend what it would be safe to assert of the powers of a student who could just succeed in obtaining pass marks at an examination in several subjects. The reply was: "I think you could say that he could pass the examination at the time that he passed it." It has long seemed to me that this admirable answer, hedged round with such comprehensive caution, would make an excellent starting point for a thorough-going inquiry into examinations. For with a scientific scepticism worthy of Descartes, it carries doubt as far as doubt can go; refusing to assume even that a student who has passed an examination actually possesses the powers and attainments which a pass is intended to guarantee.

In the laborious and very valuable study before us, Professor Valentine begins at this point. He devotes Part I of his work (pp. 13-40) to a brief study of the unreliability of examinations, including what he prefers to term the "instability" of the markings of the same performances by different examiners and by the same examiner at different times. This instability has long been familiar to those who have looked carefully into the working of examinations; but it has only recently begun to disturb the composure of the educational public who, in spite of puzzling individual cases, have preserved a touching faith in the general infallibility of examining bodies. Professor Valentine could not fail to point out how superior mental tests are to ordinary examinations in respect of stability; but he does not on that account wish to see the latter replaced wholly by the former. Despite their stability, it is not yet certain that mental tests can perform adequately the work of selection for which examinations are often used, and even if it were certain, parents and teachers are not yet ready to let the customary examinations drop.

In such circumstances one may find it a little paradoxical that the rest of the book should be devoted, not to the improvement of examinations but to the further exploration of their unreliability. Yet the author is not rightly to be charged with inconsistency. His position is that examinations, as they now exist, have a firm place in the educational system, are likely to maintain it for years to come, and, indeed, perform functions

with which it would not be easy to dispense. But the very fact that they are so widely accepted and so deeply entrenched makes it all the more important to ascertain to what degree they can be relied upon to do the things we expect them to do. In particular, they are used as means for selecting boys and girls for secondary education and, later, for admission to university studies. An inquiry into the trustworthiness of examinations might, then, well begin with the definite and relatively simple question how far success in a school entrance or a university scholarship examination can be trusted as a prognostication of success in the examinations which follow it in a secondary school or university career.

To this question Professor Valentine has addressed himself. He has been fortunate in obtaining access to a considerable body of well-ordered data, he has brought out their significance by methods which the non-expert will readily apprehend, while for those whose confidence is given only to results attested by sound statistical theory there is a more recondite treatment in the appendices. Anybody who has worked in this region, where a high degree of selection of the *Versuchspersonen* is apt to send correlations astray, will appreciate Professor Valentine's anxiety not to put forward misleading results, and will share his satisfaction that he has enjoyed the great advantage of submitting his work to Professor Godfrey Thomson's critical eye.

Part II of the work (pp. 41 to 100) is devoted to the entrance examination for secondary schools. There is no need to stress the immense social importance of this examination, the results of which determine the subsequent educational fate of thousands of children. It marks in very truth the crisis in the life-history of a large and most important section of our population. One would like to think that a test upon which so much depends had a high prognostic value, but Professor Valentine's statistics go only too far to justify school common-room criticisms of the "junior scholar." The correlation between the orders of merit in the entrance examination and in the School Certificate examination four or five years later is always disappointingly low, and in the majority of the centres considered is actually insignificant. As Professor Valentine's simple and illuminating arrangements of the facts show, there is, between entrance and the School Certificate stage, such a shifting of places that, in the end, the lowest third of the candidates at entrance do as well as the highest third. It is important to note that where this anomaly is least marked, mental tests have entered into the entrance examination and well-considered precautions have been taken to standardize marking.

The most serious inference to be drawn from these results is that the entrance examination, regarded as a sieve, separating those who can

from those who cannot profit by a secondary education, is extremely unreliable. If many candidates among the lowest third of the entrants eventually show better form than many in the highest third, there can be no doubt that some of those excluded would have shown better form than some who were selected. And it is, indeed, notorious that in schools, such as the London central schools, which are peopled almost wholly by boys and girls who fell below, but not greatly below, the margin of success in the scholarship examination, there are many who achieve academic successes which would have made the fortune of a grammar school in the old days of competition. In short, they must be children of outstanding ability whom the selection failed to select.

Lest it should be thought that the inefficiency of the entrance examination ought rather to be ascribed to the School Certificate examination, the author shows that where orders of merit in that examination and in school tests taken about the same time are available they correlate well with one another, and correlate about equally poorly with the order of merit at entrance. Moreover, he shows that reliability begins very quickly after admission to the secondary school: i.e., that there is a very satisfactory congruence between the performances of pupils in the first secondary year and in the School Certificate examination. It is clear, then, that the entrance examination, applied just before the pupils leave the primary school, is insufficiently diagnostic of factors which begin to come into play directly or very soon after secondary studies have begun, or else is vitiated by conditions which confuse its verdict.

Professor Valentine thinks that both kinds of cause are operative: that unevenness in teaching, and still more deliberate cramming in the primary schools, may defeat the purpose of the entrance examination, and also that the examination may fail to bring to light specific abilities which have a great deal to do with a child's success in the new studies of the secondary curriculum. He returns so often to the latter explanation that one supposes that he attaches great weight to it. It must be an explanation somewhat unwelcome to those who have come to think of ability in accordance with the simple scheme which Spearman's Two Factor theory suggests. If the entrance examination succeeds in giving pretty correct relative estimates of "g," one is surprised that adventitious local abilities and interests should so much distort achievement in activities which are generally thought to be rich in "g." There is no doubt that, as Professor Valentine himself remarks, a fuller investigation of the factors entering into activities such as mathematics, linguistics, etc., is call for. Meanwhile it is equally clear that more determined attempts must be made to

increase the lamentably low selective reliability of the entrance examination for secondary schools.

Part III carries the inquiry to the universities, and asks to what extent scholarships are justified by the subsequent achievements of their holder—the winning of first or second class honours in the final examination for a first degree being the criterion. The chapters dealing with this subject are full of interest but do not raise issues of the same importance as those connected with the entrance examination. The investigation includes the ancient as well as the modern universities, and it is interesting to note that, when allowance is made for the bright particular stars which will always illuminate the firmament at Oxford or Cambridge, the significance of a first class and a second class in honours is much the same in all the English universities. Moreover, none of the universities approach infallibility in selecting by examination those who will do brilliantly in the degree examinations. Even at Oxford and Cambridge one-fifth of the scholarships and exhibitions are misplaced—in the sense that their holders are beaten by Commoners. About one-tenth of the State scholarships go astray, and in the provincial universities there is a much larger misdirection of financial aid. There is, however, compensation in the fact that when the universities choose their own scholars they make many fewer blunders than external authorities. From which Professor Valentine draws the practical inference that it would be well to withhold a large number of scholarships for award within the university after the students had had time to exhibit their true comparative form.

In the author's treatment of this part of his subject there are many details well worthy of study which do not lead to generalizations calling for emphasis in a short notice; and there is a series of appendices in which some technical points are pursued farther than could suitably be done in the text. These matters must be left to the reader to explore for himself in Professor Valentine's pages. When he has satisfied his curiosity he will probably turn his thoughts to the question: What is the moral of the story? One gathers that, in Professor Valentine's view, examinations are not to be expelled from the educational system, yet, in view of their unreliability, which he has demonstrated in so striking and unanswerable a manner, we must take them much less seriously than they are taken at present. But what precisely does this mean? Does it mean that, instead of seeking, perhaps with little prospect of success, to perfect the entrance examination to the secondary schools and scholarship examinations at the universities, we should develop other more trustworthy means of selecting boys and girls for promotion to higher studies?

To this question Professor Valentine gives a partial answer, in so far as he suggests ways in which the mischief due to the uncertain action of the entrance examination may be minimized ; for instance, that the examination and tests should be repeated so as to give children on the border line an immediate second chance, and that a further examination should be held a year later ; that children who have entered the secondary school without earning financial help should receive it if they distinguish themselves later ; and (a logical but probably not a popular proposal) that there should be an exit from the secondary school of those who, after a year's trial, do not justify their admission, or alternately a wider variety of curriculum within the secondary school itself. This is as far as Professor Valentine goes, and we have no right to compel a fuller expression of his opinion.

It is sufficient that, by an inquiry to which every future investigator of the subject must pay serious attention, he has established with perfect clearness facts which must play an essential part in shaping such an opinion.

T. P. NUNN.

BOOK REVIEWS.

A History of Psychology in Autobiography, Vols. I and II: Edited by CARL MURCHISON. (Clark University Press. Pp. 516, Vol. I, and 407, Vol. II. 28s. each.)

Professor Murchison has compiled two volumes of very great value. They will indeed be of interest from the point of view of autobiography as well as from the point of view of psychology proper, for many of the writers have not hesitated to give in considerable detail the story of their early development. This is particularly interesting in that we have autobiography written by competent psychologists, and frequently, as for example in Claparède's fascinating story of his early life, interpretations are given which could not be given by anyone who is unfamiliar with psychology. The main interest, however, undoubtedly arises in reading of the development of psychological views.

What strikes one particularly in reading some of the autobiographies is the varied experience of some of our leading psychologists before they finally found their proper specialized interest. For example, those who know William Stern only through his studies of childhood will be struck by the predominance of philosophical interest in the greater part of his life. Most readers will be familiar with the fact that McDougall spent many years on biological and medical science before finally turning to psychology, but fewer will have heard of Spearman's following of the profession of a soldier and those who do now learn of it may feel that here may be an example of military qualities transformed into remarkable courage in attack on opposing systems of thought!

The study of some of these biographies should indeed be heartening and stimulating to younger men, for many have had great difficulties to overcome, and it would seem that the genuine ability for and intense interest in psychological matters will "out" in spite even of a training which is of little relevance, and notwithstanding many obstacles in the way.

I have dwelt perhaps unduly on the purely biographical side of these books. Undoubtedly, however, to the student of psychology it will be most enlightening to see the way in which particular systems of thought gradually developed from earlier studies and work. An advanced student of psychology, or any student specializing in a particular topic, will undoubtedly gain much from reading the lives of the leading authorities on the selected subject.

It should be added that Dr. Murchison expressly disclaims any idea of selecting necessarily all the leading psychologists, and in particular he states that there is no significance in the special grouping of certain psychologists in the earlier volume. The ablest psychologists, so far as they may be distinguished, will be scattered indifferently among all the various volumes, which it is expected will number four.

Probably the most useful conclusion of this review will be a list of the names in the two volumes before us.

Volume I: James Mark Baldwin, Mary Whiton Calkins, Edouard Claparède, Raymond Dodge, Pierre Janet, Joseph Jastrow, F. Kiesow, William McDougall, Carl Emil Seashore, C. Spearman, William Stern, Carl Stumpf, Howard C. Warren, Theodor Ziehen, H. Zwaardemaker.

Volume II: Benjamin Bourdon, James Drever, Knight Dunlap, Giulio Cesare Ferrari, Shepherd Ivory Franz, Karl Groos, Gerardus Heymans, Harald Höffding, Charles H. Judd, C. Lloyd Morgan, Walter B. Pillsbury, Margaret Floy Washburn, Lewis M. Terman, Robert S. Woodworth, Robert Mearns Yerkes.

C.W.V.

The Education of the Whole Man: By L. P. JACKS. (University Press, Ltd. 255 pp. 6s.)

These chapters and addresses are a pleasure to read, for the author writes with vigour and conviction. He believes in the regenerating influence of education: education not as popularly conceived, an affair of classes, courses of lectures, and

book learning, carried on in classrooms and lecture halls during the period of youth, but education conceived far otherwise, as including "the whole process of making good citizens." From this standpoint education is regarded as "a huge social enterprise" only to be accomplished by "the active and continuous co-operation of the people themselves in all centres of their activity," a process "covering the life of the citizen from birth to death," in hours of industry as in hours of leisure. Education thus conceived is an all-round culture of the whole man, it is not episodic but sustained, it is not a piecemeal affair of teaching subjects divorced from life, but rather it includes the culture of body as well as of mind, of creative powers and skill no less than of receptive powers and intellect, of "the whole man or boy" who is "mind, body, character, and soul, all in one."

A wise word is said about sex education. The author holds that "the diffusing and cheapened sex knowledge amongst the unwhipped multitudes of pleasure-seekers and C.3's" is calculated to lead to experiment rather than to control. He points out that the awakening and training of the sense of beauty, the pleasures resulting from creative skill rather than from external excitement, are the best of all prophylactics against vice. M.H.

School Life and Nervous Stability: (Published by the National Council for Mental Hygiene, 78, Chandos House, Palmer Street, S.W.1. Pp. 32. 6d.)

This pamphlet, to which Sir Maurice Craig contributes a foreword, is the report of an enquiry made in about forty schools of all types, covering ten thousand children of both sexes, of the ages of five—eighteen. We cannot do better than give first a brief outline of the contents:

Part I, *The School*, shows the average times allotted to the expenditure of energy and to recuperation; the provisions for recording growth, for physical education, for creative effort in craft and art; the incidence of special strains due to work, examinations and sports, and the relation of these school's strains to the natural periods of stress due to growth.

Part II, *The Individual*, sets forth the arrangements made for self-chosen study and recreation; for special diet, remedial treatment, rest lying down, and opportunities for silence; the recording of illnesses, colds, etc.; remedial inspections; systems of punishment; special problems; teaching in matters of sex. In each subsection the statement of the data is followed by comments and suggestions.

Part III, *Conclusions*, indicates possible scholastic causes of nervous instability, upon which experiment and research might be undertaken.

The report has been drawn up by a Committee comprising members of the medical and teaching professions and of the general public.

The report is certainly one of great value, not only for the results that it gives, but as an indication of further possible lines of enquiry. One may not agree with all the conclusions and suggestions made, and the extension of the enquiry and records is particularly needed in view of the fact that when divided into the types of schools and ages of pupils the numbers become very small on which to generalize. This may account for such a surprising result, for example, as that corporal punishment may be used in all the boys schools in the 14—18 year group by prefects but its use by the staff is restricted in 27 per cent of such schools. C.W.V.

Herbert Spencer on Education, edited by F. A. CAVANAGH; and *Matthew Arnold's Culture and Anarchy*, edited by J. DOVER WILSON, in the "Landmarks in the History of Education" series. (Cambridge University Press. Pp. 233 and 241. 6s. each).

We welcome these two new volumes in this sound and most readable series, "Landmarks in the History of Education." The discriminating introductions and the valuable notes at the end of each volume will undoubtedly cause them to be regarded as the standard editions in this country for a considerable time. Professor Cavanagh emphasises the importance of reading Spencer's *Education*

in the light of the history of the writer's own education particularly as revealed in his autobiography, from which Professor Cavanagh gives a number of most apt quotations. As he points out, Spencer was handicapped by his ignorance of school conditions and by the limits of his own capacity, for example, his dislike of the study of foreign languages and to his apparent incapacity for them. As to Spencer's general argument Professor Cavanagh has many trenchant criticisms and indeed one fears that the impression received by some on reading them may be that Spencer is hardly worth reading, which the Editor would certainly deplore.

In editing Matthew Arnold's *Culture and Anarchy*, Professor Dover Wilson has been happier in having to deal with an author about whom he can be unrestrainedly enthusiastic. Indeed he goes so far as to describe *Culture and Anarchy* as "the finest apology for education in the English language." His introduction provides especially a most valuable historical background, necessary for the appreciation of the book, and gathering from a wide survey into a very small space much that would be difficult for the ordinary reader to obtain from other sources. Possibly the author of *Culture and Anarchy* underestimated the contribution made by nonconformist religion among the masses of the poor people of "sweetness and light," though perhaps in a somewhat different sense from that in which the phrase was used by Matthew Arnold. That however is a minor matter, and we can only be glad to think that this edition will lead to more frequent study of this too much neglected masterpiece on education.

Education of the Backward Child: By D. KENNEDY-FRASER. (University of London Press, Ltd. Pp. 254. 6s.)

This is a valuable book both as a text-book for the student of child psychology, for the teachers who are engaged not only with children definitely classified as backward but with the ordinary class which almost invariably contains a few backward children, and also for the parent of any child who is "not too bright." The book combines psychological insight and approach with a sympathetic understanding of the practical problems of the classroom.

After an introductory part in which such questions are considered as: "What is the backward child?" and "School organization in connection with the backward child," the specific occupations such as handwork, aural language, reading, number, and so forth, are dealt with individually in a most helpful way.

C.W.V.

Practical and Artistic Activities in the Schools: By U. M. EDMONDS AND E. A. WATERFALL. (George Allen and Unwin. Pp. 211. 6s.)

This book contains a survey of various types of practical and artistic activities which could be used in schools. The authors are much impressed by the value of these activities for the development of children, both as individuals and as members of society, and urge that more time and attention should be given to them. Moreover, they believe that nearly all children have aptitudes for one or most of them and that, therefore, such activities would be popular as well as beneficial.

There is not much that is new in the book, and the style lacks sparkle.

M.S.

The Scientific Selection and Training of Workers in Industry and Commerce: By M. MARTIN-LEAKE and THYRA SMITH, with a foreword by Sir Francis Goodenough. (London, Sir Isaac Pitman and Sons, Ltd., 1932. Pp. xii+104. 5s.)

Vocational selection is not such a simple matter as these authors would have us believe, and their book would not prove a very reliable guide to the inexperienced, for whom it is written.

There is a certain amount of new and interesting information based on the personal experience of the authors in a large factory: but on the whole the title of the book is not justified.

L'Âme Enfantine et la Psychanalyse : by CHARLES BAUDOUIN. (Delachaux et Niestle S. A. Pp. 274. Price 5 fr.)

Those who are familiar with Baudouin's earlier study of suggestion and auto-suggestion will take up this book with keen anticipation. It reveals again his admirable clarity of style and his power of selecting interesting examples. These will be suggestive both to teachers and parents. Baudouin indicates in his summary that he is not primarily concerned with cases of child psychology which need the treatment of a psycho-analyst. He admits, however, that he has had to draw his examples chiefly from psycho-analytic studies because of inability to get such good cases elsewhere. This gives, we think, a clue to the weakness of the book, namely, that there is no indication as to how far the types studied are general or exceptional cases. Furthermore at times the author surely breaks the sound rule of not interpreting anything by a more elaborate and subtle explanation than is necessary ; as, for example, when he remarks that a certain boy, when his father beat him, trembled and cried so that his father might beat him the more.

Psycho-Analysis for Normal People : By GERALDINE COSTER. (London: Oxford University Press. Pp. 227. 2s. 6d. net.)

This is the Third Edition of a little book which first appeared in 1926. It has been, to some extent, rewritten to bring it up-to-date, but, in the main, it retains its original form and is an interesting introduction to the subject for the general reader. It is written in an easy pleasant style, and may lure the uncritical into believing that psycho-analytic methods are easy and results certain and rapid. The writer has, however, been careful in her terminology, has preserved a general sanity in her outlook and avoided many of the traps awaiting the unwary popularizer of this subject. The book is primarily intended to be read by nurses, and may be recommended for critical study by all who are prepared to be frankly analytical and who can resist the slight tendency of the author towards over-generalization.

A Study of the Unsupervised Behaviour of a Group of Institutional Children : By MAPHEUS SMITH, Ph.D. (Marshall and Bruce Co., Nashville, Tenn. Pp. 40).

This pamphlet is interesting as an example of a detailed method of study of the social behaviour of children. The special characteristic of the method used was that very detailed descriptions of actions were used rather than broad classifications. The following, for example, were recorded separately : " looks at self " ; " sings " ; " attacks persons " ; " obeys " ; " is obeyed " ; " gives way " ; " performs a useful service " : and so forth. With such rather commonsense divisions of activities very high correlations were maintained between the assessments made by different observers. The actual results given are slight. One could wish they had been further elaborated. The experiment is undoubtedly of value from the point of view of the better study of behaviour.

Research in Education : By ROBERT R. RUSK. (London : University of London Press, Ltd. Pp. 108. 4s. 6d.)

In this volume Dr. Rusk has extended and elaborated his interesting and informative address to the Education Section of the British Association in 1928. He has set out in clear and entirely non-technical language the claims for research in Education. He claims that his book is only " An Introduction." It is this, and nothing more, but teachers and educators, students and administrators, may profitably accept Dr. Rusk's introduction to the company of those who are doing such valuable work in educational research, and, having learnt the necessary art of adaptation to the demands of this new company, may contribute their quota to the furtherance of real research in the principles and methods of education. The book should be widely read.

Der Ideale Lehrer, nach der Auffassung der Schüler: By J. HACKER. (Herder and Co., G.m.b.H. Verlagsl. Freiburg im Breisgau, 1932. Pp. 156).

In this book Dr. Keilhacker has given in a useful form a full extensive enquiries as to the development of school pupils' idea teacher. Parts of the enquiry have been published before, one in an earlier number of this *Journal* (Vol. II, Part I). The investigation essays of about 4,000 school pupils of all ages from 10-19 years. In the prejudicing of the children's views by their essays being written at home and some were done in group connection with the school. The results were found substantially such cases. Many interesting and suggestive facts are given as to the qualities they wished to find in their teachers; for example characteristics, strictness, consistency and so forth. A substantive book also deals with the pupils' opinions as to the efficiency of the teachers. There is far too much interesting detail in this to be exemplified here, but the main conclusions of Dr. Keilhacker should be the most important being his emphasis upon the fact that the nature of the teachers is a function of the mental development of the pupils varies little according to the type of school. At the same time the book also undoubtedly shows itself in the views of these pupils; and, important of all, he emphasizes the demand made by the pupils, and their age, that the teachers should enter into relationship with and as ordinary human beings and not remain merely instructors undoubtedly a most interesting and useful contribution to the study of school pupils, and many practical inferences can be made as to satisfaction between teachers and pupils.

History, Senior Course: General Editor, C. B. FIRTH, (Ginn and Co., Ltd. Book I, 2s. 6d.; Book II, 2s. 9d. and IV, 3s. each; Teachers' Books, 2s. 6d. each).

This is a well planned series of books intended for pupils from 14 years of age. It is divided into four books, dealing in an admirably fitting way with different aspects of historical development. The first by Miss Elsa Nunn, deals with the growth of the British commonwealth; the second by Miss K. M. Gadd is on *Ancient Civilization*; the third on *Pioneers of Science* is by the general editor, and the fourth on *Liberty in Europe* by Miss A. F. Titterton and the general editor. To each of these books corresponds a book for the teachers' use in which are supplied notes, original material and indications of method of a most valuable whole is marked by a unity of plan and a wise adaptation to the needs of the pupils of these years. The series represents the application of genuine thought to the teaching of history.

Science and the Modern World: By A. N. WHITEHEAD (Cambridge University Press. 265 pp. 5s.)

The Cambridge University Press are to be congratulated on the publication of this important book in such an inexpensive and convenient edition an encouraging sign that a book by such a profound thinker should have had so wide a circle of readers.

Dr. Whitehead is remarkable, not only for his grasp of modern scientific developments, but for his fine style and for an equal sensitivity to the needs of humanistic studies. Thus the reader will find, for example, philosophical poetry brought into service in a book which includes articles on relativity and mathematics.

The Educational Crisis in Sweden : By C. S. v. HOLSTEIN BOGOSLOVSKY.
(Columbia Univ. Press and Mr. Humphrey Milford. Pp. xiv and 301. 22s. net.)

A review of (a) the National Political and Social Background of Swedish Education, (b) the Present Educational Situation, (c) American Influence on Swedish Education in the Past, (d) Present Educational Situation in Sweden and American Educational Experience. The work contains an extensive bibliography of books, pamphlets, press notices, laws, regulations, and unpublished data bearing on the matter dealt with in the text.

The development of education in Sweden has proceeded along several different lines, and the attempts made in comparatively recent times to construct a unified national system have raised educational storms of which the world at large has been ignorant. Sweden has been influenced by what has been done elsewhere, but we gather that equilibrium has not yet been fully adjusted between contending parties, and that on the whole Swedish educational policy is about as unsettled as that in any other country.

The analysis given in the present volume is exceedingly detailed ; it will be of greatest value to the student of comparative education but hardly of general interest. In its conclusion the suggestion emerges that Sweden might profit greatly by taking more than it has hitherto done from the educational ideas of the United States and some reciprocity is hinted at to the advantage of each country, but no secret is made of the vast differences of national organization of Sweden and America.

A.P.B.

The Mental Defective : a Problem in Social Inefficiency : By RICHARD J. A. BERRY, M.D., F.R.C.S., F.R.S.E., and R. G. GORDON, M.D., D.Sc., F.R.C.P.E. (Kegan Paul, Trench, Trubner and Co., Ltd. Pp. 196. Price 8s. 6d.)

The problem of the mental defective is such an urgent one at the present day that one welcomes a book written by two men who have intimate practical acquaintance with mental defectives. This book is intended primarily for laymen and it is lucidly written with careful attention to definitions of any technical terms used. It stresses repeatedly the special importance of the study and treatment and segregation of mental defectives. Its dominant note, however, is the emphasis upon the dependence of mental deficiency on defective brain structure. Indeed a substantial part of the book is a description of the brain and nervous apparatus. The object of this is apparently chiefly to bring home to the reader the incurability of most cases of mental deficiency ; but we think the authors might have done this with a much briefer reference to physical concomitants. Many assertions may appear to suggest that a scientific knowledge as to the exact dependence of mental forces on brain forces has been obtained ; whereas a knowledge of the incurability of mental defect is surely ultimately dependent upon our experience and study of such individual cases. The book, however, should undoubtedly be useful in stimulating apathetic readers, if it gets into their hands, into a keener concern about this terrible problem.

Hints on the Teaching of Modern Languages in the Home and the School :
By G. GLADSTONE SOLOMON. (Heinemann. Pp. 36. 1s.)

No one need be deterred from reading this book by the word "home," by certain of the cover recommendations and notices, nor yet by the fact that an occasional statement will be encountered which may seem unguarded, such as that concerning bilingualism in Wales. In spite of many works of scientific stamp on methodology one wonders if, after all, the author of this modest pamphlet is not nearer the truth. The reviewer has in mind "*Esperanto por infanoj*," which was written by the author, like "*Le Français Pour Les Jeunes*" and "*Ich Kann Deutsch Lesen*" on the Gladstone Solomon method, and he thinks of it as, perhaps, the only really appealing book for beginners he has met. The reasons for this are contained in the "Hints" reviewed.

A.T.

This Language-learning Business: By H. E. PALMER AND H. V. REDMAN. (Harrap. Pp. 219. 6s.)

From the pontifical Palmer of "The Scientific Study and Teaching of Languages" we come to this genial collaboration. It is valuable to be familiar with earlier books by Palmer to trace the evolution of his ideas. Is it not rather rare to find evolution of ideas in a writer on modern languages? The style of these collaborators is attractive: a duologue as to the nature of language and letters from imaginary but distressingly familiar would-be students of language give spirit to this book, which, at the same time, requires very careful reading, as do all works with which "the senior partner" is connected. Has the secret been discovered? Language is a collection of symbols serving as instruments of thought and learning is their fusing. Very probably, but can the authors persuade those who cannot conceive of any but traditional methods?

The authors may put some faith in mental discipline but can the printer be blamed for that familiar horror, „Die Sprachunterricht muss umkehren?"

A.T.

Supervision in the Secondary School: By H. B. ALBERTY and V. T. THAYER. (W. C. Heath and Co., incorporated with Geo. G. Harrap and Co., Ltd. Pp. 471. 9s. net.)

This volume, so typical of American publications in its documentation, references, and thoroughness, aims at attempting "to formulate, interpret, and apply to the problems of secondary school supervision a democratic philosophy of education." The authors believe "there is a need for a philosophy of supervision that will give perspective to the practical details of teaching." Although the book is definitely American and although the "supervisor" (as such) has not yet made his appearance in England, teachers, inspectors, and administrators may glean something from this book, which deals very competently with many general problems in education.

How Shall we Train the Teacher of Modern Languages? By E. H. A. ROBSON, M.A. (Heffer. Pp. 173. 5s.)

Many would object to the form of this volume. If it is written for those who are already competent and if the author uses a multitude of words like "singerie," need they be translated? It must be admitted, however, that Miss Robson has produced an eminently readable book. Her outspoken remarks on direct method are refreshing in an already stifling desert. On general principles Miss Robson says little new, but her very many asides are valuable, particularly her chapter on "Worldly Wisdom." The book is to be recommended as being a veritable mine of information concerning text-books, prints, posters, and the many sources one forgets.

A.T.

The Growth of Visual Perception in Children: By W. LINE, M.A., Ph.D. *British Journal of Psychology*: Monograph Supplement XV. (Cambridge University Press. Pp. 148. 12s. 6d.)

This is a record of an important research dealing with the development of the apprehension of relations between simple objects represented on cards and coloured and uncoloured shapes. The results have an important bearing on Spearman's doctrine of the importance of the education of relations and their apprehension. The general drift is antagonistic to the Gestalt idea of the immediate apprehension of configuration. The whole investigation is a very thorough and valuable piece of work.

The Art of Speech: By KATHLEEN RICH. (London: Methuen and Co., Ltd. Pp. 98. 3s. 6d.)

It is interesting to note the publication recently of a number of books on the much neglected Art of Speech. The writer of this book has given the reader some of the results of her experience as a teacher of elocution, and has in an interesting way helped the student over many difficulties in developing the habit of correct clear speech. A useful appendix gives short definitions of all technical terms in general use by the speech trainer.

The Vocabulary of Arithmetic: By G. T. BUSWELL and LENORE JOHN. Supplementary Educational Monograph published in conjunction with *The School Review* and *The Elementary School Journal*. (Department of Education, The University of Chicago. Pp. xii.+146 \$1.25 post paid).

A superficial view would suggest that an elaborate research is hardly necessary in order to establish a fact known to all teachers of arithmetic: viz., that pupils do not understand many of the terms used in the text books. This research, however, will be found useful to students of statistical method, also to those interested in the important psychological problem of the development of the concept. M.H.

FOREIGN JOURNALS.

Zeitschrift für Pädagogische Psychologie. (Leipzig. February, 1932.) Contains an article by HUGO ROSENTHAL of Berlin, on *Der Beginn der Pubertät bei jüdischen Kindern*.

It has often been reported that Jewish children surpass the non-Jewish in intelligence. But this is not always confirmed, and care must be taken to discriminate the records of boys and girls, of town and country, and of different social classes. It is not fair to compare post-war London with war-time records from Eastern Europe.

It seems more nearly true to say that Jewish children are more precocious and mature at a younger age and are temporarily in advance of the non-Jewish, markedly so at ages eight or nine. Then at some age not quite clearly confirmed, say twelve or thirteen, the Jews lose their advantage for a year or so, and then regain it later. The Jews experience an earlier puberty. These storms break on them a year earlier, and on a race which for centuries has had a heritage of physical inferiority.

There is a pre-puberty stage of indifference, a "tunnel-period" into which the Jew-boy disappears from the vision of his non-Jew schoolfellows. The other boys see how their Jewish comrade no longer laughs with his class-mates; his movements, the pace of his words, his wishes and dreams, his inclinations and aversions are all different. The others are still in childhood, the Jew has disappeared into the tunnel. Hence an estrangement, an alienation, the Jew seems something other. Some light is shown on these changes when diaries are available as material: e.g. a child's diary up to age twelve, then a gap of several months, and then almost a new person.

H.R.

Zeitschrift für Pädagogische Psychologie 33. Jahrg. Nr. 9. (September, 1932). Contains an article by ADOLF BUSEMANN on *Zur Psychologie des Sitzenbleibens*.

"Sitzenbleiben" means to fail to get a class remove at the end of the year, and to be left "repetent," to repeat all the year's work again, unless some sort of coaching classes come to the rescue. Once at least during their school life-time from a quarter to a half of the elementary school scholars find themselves left, sometimes more than once; and the lower social grades, the children of unskilled workers, suffer most. Illness or bodily weakness is sometimes the cause, reflecting inferior living conditions. The poorer children fail in their youngest years, the better class children more at later stages. The children from small families fail less often than children from large families who are more often retarded by infectious diseases. The Sitzenbleiben group contains not only the less gifted children but also those socially handicapped as "nicht-volletrigen," not having both parents, orphans, step-children, illegitimate, parents divorced, or war-orphans.

Hence "Hilfsschulkinder," special school children, may include not only mental deficient but also "mühschädigter," those crippled by their environment.

H.R.